isfte

# Journal of the International Society for Teacher Education

Volume 20 Issue 1

## Key World Issues for the Professional Development of Teachers: 2015 and Beyond

MONTCLAIR STATE UNIVERSITY

香港浸會大學
HONG KONG BAPTIST UNIVERSITY

WEBER STATE UNIVERSITY
Moyes College of Education

AARHUS UNIVERSITY
DEPARTMENT OF EDUCATION

# Journal of the International Society for Teacher Education

Key World Issues for the Professional Development of Teachers:
2015 and Beyond


ISSN 1029-5968

JISTE is an official, refereed publication of ISfTE. The goal of ISfTE is to publish six to eight articles in each issue. Using the seminar theme, articles in the first issue of each volume are based on papers presented at the previous seminar. Articles in the second issue are non-thematic or have special themes. Points of view and opinions are those of the individual authors and are not necessarily those of ISfTE. Published manuscripts are the property of JISTE. Permission to reproduce must be requested from the editor.

JISTE is issued twice yearly by the International Society for Teacher Education. The subscription price of $75.00US is included in the annual membership fee. Additional copies of the journal may be purchased for $25.00US. Institutional subscription to JISTE is $100.00US per year.

**JOURNAL OF THE INTERNATIONAL SOCIETY FOR TEACHER EDUCATION**

Volume 20, Number 1

## My Final Edition of JISTE

It is with sadness and relief that I am announcing my retirement as the Associate Editor of JISTE. I knew when I took on this task five years ago that it would be monumental. It has been that and more. Each edition has been unique: from the smaller ones with seven or eight articles to the huge 19-article edition packed with papers from our memorable seminar in Paro, Bhutan. I have spent untold hours editing for standard English yet trying to honor the authors' voices, applying APA publishing conventions (I think I have the book memorized), redoing tables to make sure the data made sense and followed APA requirements, communicating with authors after the edits were made to be sure they agreed with my editing (including one memorable email conversation with a colleague about his liberal use of commas; because I wanted fewer and he wanted more, we split the difference), formatting the final copy of each edition so that it would be ready for the print publication, and finally, uploading the final editions to EBSCO and more recently ERIC.

I have appreciated the friendship and support of the editor, Karen Berg Petersen. When we began this endeavor, we "Skyped" several times for each edition. We managed to make that work even though we have an eight hour time difference. I would like to thank Karen publically for all she has done for this journal. She has worked tirelessly to find new indexes and databases that will accept JISTE. Fortunately, for JISTE and the organization, she is staying as the editor.

Now, it is time for me to turn over the associate editor reins to two capable women in Canada – Leanne Taylor and Vera Woloshyn – both are on the education faculty at Brock University. I know they will continue improving JISTE over the next several years.

## About this Issue

All of the articles in this edition were originally presented in paper groups at the 2015 Seminar of the International Society for Teacher Education, which was sponsored by Montclair State University in Montclair, New Jersey, USA. Dr. Jacalyn Willis, a long-time ISfTE member, was the convener.

I would like to thank Leanne Taylor who edited three of the articles, and Janet Powney who edited one article for this edition. Their help was much appreciated.

# PROMOTING COGNITIVE AND EMOTIONAL ADJUSTMENT WELL OF NIGERIAN CHILDREN: CRITICAL ISSUES FOR EARLY CHILDHOOD TEACHER EDUCATION

Monica Ngozi Odinko
Institute of Education, University of Ibadan, Ibadan, Oyo State, Nigeria

**Abstract:** *Preschool children could be helped to make early adjustment to a school environment before normal schooling begins. Transition from home to school represents one of the biggest changes that children undergo in the first eight years of life. This change may be likened to that which a seedling undergoes when transplanted from one place to another. Thus, those working with children should seek ways to minimize the shock and increase opportunities to aid quick stabilization. The ability to achieve this may not be a chance factor but a function of some school and some home factors. This study, therefore, investigated how levels of parental involvement and school factors aid in promoting children's emotional and cognitive adjustment to school. Six out of eleven predictor variables contributed significantly to the variance in the factors influencing the adjustment of children at the nursery school setting.*

**Keywords:** preschool children, transition, adjustment

## Introduction

Early adjustment to a controlled learning environment could help young learners to progress in schooling. This may be why research into possible factors that contribute to the adjustment level of learners is not in short supply. In Nigeria, nursery education is largely the cradle of formal education. The school as an academic institution exists to provide a basis for building a stronger sense of community of learners within and around it in order to produce the kind of citizens needed by society. Consequently, it is charged with the responsibility of molding learners, especially at the early stage of development, to conform to the dictates of the society. The school, thus serves as an agent of socialization for society. However, attaining the desired effects, which the society expects through the school system, is not easy. Undoubtedly some psychological and social factors could impede the process of children's development especially at inception into the school setting. Some nursery school children often appear to be afraid of the school environment as new comers. These children seem to refuse the sudden separation from their mothers and home environments.

To that effect Olwens (1993) observed that some children in nursery school settings do not like to attend school regularly. According to him, some children cling to their mother's dress as a sign of unwillingness to enter the school premises. Hence, the school environment is seen as not being comfortable for them. Such children can hardly adjust unless the environment and its institutional members offer them a cordial climate of relationships. Unless teachers exhibit affectionate teacher-pupil relationships, some children may find it difficult to adjust in nursery school settings.

No wonder Ramey and Ramey (1994) asserted that transition from home to school represents one of the biggest changes that children tend to undergo in the first eight years of life. This change according to Cleave, Jowett, and Bale (1982) may be likened to the change a seedling undergoes when transplanted from one place to another. To them, when a seedling is

transplanted from one place to another, the transplantation may be a stimulus or a shock. Therefore, the plant should be re-established as quickly and as easily as possible. Just as the gardener seeks ways to minimize the shock for the seedling, those working with children (teachers and parents) should also seek ways to minimize the shock young children may experience as they move from home to school.

The term adjustment in child psychology has its roots in the biological term adaptation; the two concepts can mean how species (in this case children) adjust to changes in environment (from home to school). Hungerford and Cox (2006) conceived adjustment as an individual's general adaptation to his or her environment and the demands of life. Napoli, Kilbride, and Tebbs, (1988) defined adjustment as an "individual's response to the physical, psychological, and social demands of the self, other people, and the environment." While (McLloyd, 1998) conceives adjustment as the psychological processes through which people manage or cope with the demands and challenges of everyday life

Adjustment, per se, stresses environmental effects on people's attempt to meet their needs. There is, however, no universally accepted standard against which to measure adjustment. Goleman (1995) includes school environment, poverty, and the nature of discipline, phobia and lack of good parental care as factors affecting a child's level of adjustment to a nursery school setting. However, a child's school adjustment could be measured by ascertaining his, or her, level of social, emotional and cognitive skills which aid the child to respond favorably to the demands of the new environment.

Any job requires a person to have suitable knowledge or training. Shulman (1986) described a qualified teacher as one who has the capacity to support children's learning. Hallak (1990) stressed that the quality of any educational system depends on the quality of teachers. In the same light, Ajayi (1989) considered that teacher education is the key to any educational development; without adequately trained teachers, no country can hope to expand children's intellectual capabilities. Furthermore, the Independent Education Union of Australia (1997) regarded the level of related training undertaken by the staff as a significant variable in influencing the quality of care provided in pre-school programmes. They advised that early childhood programmes be staffed with adults who are familiar with issues relating to child development, are able to recognize and provide solutions for children's needs, plan developmentally appropriate programmes, and successfully manage groups of children.

Kinanee (2010) itemized psycho-social factors in child development that may account for children's problems in adjusting to school settings: an unfriendly school environment, the nature of school rules and regulations, discipline in school, presence of violence, and pupil bullying. In addition, lack of parental encouragement or the nature of the home environment could also encourage school-phobia. Uzoeshi, (2004) observed that where parental encouragement is lacking, pupils may not have the urge to withstand the school environment. A nursery school child's experiences of a tense and unfriendly atmosphere might cause him/her to withdraw from school.

Majorobanks' study (1999) revealed that the occupational status, the educational level, and income of parents were important predictors of their children's educational attainment. This indicates that the higher the child's family socio economic status, the higher a child's school adjustment and achievement. Furthermore, parents of high socio-economic status are more able to give their children an early start in education by

creating an enabling learning environment at home and placing them in good school. Children from low-socio-economic backgrounds are known to start their school without such clear advantages.

Many early childhood researchers and educators believe that material provision should be central to the early years' environment to give pre-school children first-hand experiences (Bradley & Caldwell, 1977; Gura, 1996; Montessori, 1912). However, they emphasized that provisions need to be wide ranging, both indoor and outdoor with natural and manufactured objects. Montessori (1912) saw material provision in the preschoolers' classroom as very important and advocated that the materials used for children at this level must be beautiful, colourful, and purposeful. To her, the classroom environment (which includes materials and equipment) must be carefully organised so that children could easily and effectively use them. The role of the teacher, according to Montessori (1912), is to understand the educational values of all the materials provided for use in the classroom and to become sensitive to the right time to use them to present work tasks to learners.

Adequate materials provision in the classroom may have significant effects on students' behavioural development (Varol & Farran, 2006). Bennett, Elliot, and Peters (2005) analyzed the characteristics of kindergarten classrooms and their effects on students' behavioural development and found that the adequacy of classroom resources may improve children's social and emotional wellbeing. Pioneers of early childhood education, including Montessori, Pestalozzi, Froebel, Owen, and Dewey, believed that mathematics should be introduced to young children through objects (Bruce, 1997; Russell, 2000; Varol & Farran, 2006; Wolfe, 2002). They were of the opinion that it makes learning an engaging and fun activity as well as enables learners to develop an imaginary picture of numerals in their minds, which leads pupils to increase future computational dexterity. Reviews of research have shown that educators and developmental psychologists have located the importance of home influences on children's intellectual development (Erickson, 1997; Pianta & Walsh, 1996). Parents not only mediate learning experiences through talking with their child, sharing experiences, and teaching but also by organizing the child's learning experiences at home. Parental provision of appropriate play materials and opportunities for a variety of activities during infancy contributes to intellectual development (Bradley & Caldwell, 1976). Schaefer and Edgerton (1995) showed that parents' provision of educational experiences correlated positively with learner test scores and teacher rating of child intelligence, curiosity and creativity during kindergarten.

Problems threatening domestic happiness, including jealousy and strife, could be associated with family structure or the number of children needing attention (Majorobanks, 1999). Thus, a child experiencing less attention may be prone to anti-social behaviours such as aggression and self-centeredness. On the other hand, a child who grows up in a large family setting may find it very easy to adjust in other situations where there are many children. The reverse may be the case for a child who is the eldest or from a small family.

The National Association for the Education of Young Children in the US recommends the regulation of adult-child ratios to enable teachers to have sensitive, responsive interaction with all the children in their care (NAEYC, 1998). Blatchford, Moriarty, Edmonds, and Martin (2002) argued that the greater the number of children in class, the more time teachers will spend on procedural and domestic matters (such as taking the registers, lining children up, putting on coats, toileting, accidents), and conversely, the less time teachers will

spend on instruction and interacting with individual children. They also argued that teachers are able to be more sensitive and responsive in their interactions with children when there are fewer children per adult.

The Student-Teacher Achievement Ratio (STAR) project provided evidence that not only did smaller classes (between 13-17) in kindergarten and early grades lead to pupils' higher academic achievement, but that these effects are greater for students who have experienced more years in small classes (Nye, Hedges, & Konstantoloulos, 2000). Hall and Nuttall (2000) revealed that the size of class influences the degree to which teachers are able to operate between their pedagogical philosophy and their practice. Based on teacher perceptions, this implies that the number of pupils in a class could affect the quality of interaction, the kind of teaching methods used and the extent to which the teachers could implement what they felt was best practice in helping pre-school children learn.

Where a school is located, whether urban/rural, is most likely make the school acquire different characteristics simply due to the variation among caregivers and the kind of intellectual developmental opportunities offered in the different environment. Rural schools in the US tend to be smaller, geographically isolated, alternatively staffed and have fewer material resources allocated to them (Roelke, 1996). Based on experience, a typical rural setting in Nigeria is characterized by the following: fewer schools at all levels (pre-primary, primary as well as secondary), no tarred roads, lack of electricity supply, lack of community/school libraries, no pipe borne water, no bill boards, no parks, low per capita income, and mainly illiterate adult population. The reverse is usually the case in urban locations.

Elley (1994) in the International Association for the Evaluation of Educational Achievement (IEA) study conducted in 32 countries found urban schools typically had better resources and better qualified teachers than rural schools. Highly qualified teachers prefer to live in cities where more materials are usually available to students. Such advantages enjoyed by urban dwellers may have typically influenced their higher achievement.

## Problem Statement

Though much has been investigated on the possible factors that could affect children's level of adjustment to school, not so much has been said on the academic prospects of children who adjust easily to a learning environment. Parents and teachers are not sufficiently aware of how they can contribute to the early adjustment of children to a structured learning environment. If research placed emphasis on the advantages of teacher-parent roles and participation, as this study seeks to do, parents and teachers will want to be positively involved and society will be better for it.

Based on the stated problem, this study sought to investigate how such factors as school location, child's gender, family religion, position of child in the family, parents' educational background, parents' occupation, number of children in the family, teacher qualification, class size, and material provision can predict children's adjustment level in nursery settings in Nigeria. The research sought to answer the following questions:

1. What is the teacher's perception of a child's adjustment to the nursery school setting?
2. How do parents perceive their involvement in adding their child's adjustment to nursery school?
3. To what extent would school location, child's gender, family religion, position

of child in the family, parent's educational background, parent's occupation, number of children in the family, teacher qualification, class size, and material provision jointly predict the adjustment level of Nigerian child at the nursery setting?

4. What is the relative contribution of each factor to the prediction?

## Methodology

### Sampling Technique and Sample

The study adopted the survey design. Thus, the researcher did not manipulate any of the variables of concern but generated the information as they occurred. The target population for the study consisted of children aged 5 who are enrolled in nursery schools. The teachers of the sampled children as well as their parents were also respondents. Simple random sampling technique was used to select 40 private pre-school settings (20 from urban and 20 from rural locations) while purposive sampling technique was used to select 40 (20 urban and 20 rural locations) public primary schools that have pre-school classes attached to them.

From each selected school, simple random sampling was also used to select a nursery class. However, because of the large number of children assigned to one teacher the researcher used simple random sampling technique to select 4 pupils (2 boys and 2 girls) from each school to participate in the study. The parents and teachers of the selected children also participated. In all, 80 teachers, 320 children, and 320 parents participated in the study.

### Instruments

Three valid and reliable instruments were used (a) Teacher Perception of Child Adjustment Questionnaire (TPCAQ), (b) Parent's Involvement in Child's School Activities Questionnaire (PICSAQ), and (c) Material Provision Checklist (MPC). These instruments were developed by the researcher. The Teacher Perception of Child Adjustment Questionnaire (TPCAQ) generated information on teachers' views on the adjustment level of Nigerian children in school-like environment. It has two sections. Section A elicited information on the bio-data of the teachers working with these children (gender, educational background, and class-size), while section B focused on indices of adjustment with reliability index of 0.74. The Parent's Involvement in Child's School Activities Questionnaire (PICSAQ) elicited information on parent's level of involvement in their child's school activities. This instrument also has two sections. While Section A elicited information on bio-data of the parents (child's gender, parent's educational background, marital status, position of child in the family, occupation, family religion, and number of children in the home), section B generated information on parental level of involvement with reliability index of 0.76. The Material Provision Checklist (MPC) comprised a list of attractive educational toys and play materials expected to be available in pre-school settings to aid children's adjustment to a school environment. The researcher merely indicated the availability and non-availability of such materials.

### Data Collection and Analysis Procedure

The needed data were collected by the researcher with the help of the class teachers. The class teachers responded to the adjustment level questionnaire for every child used in each class. They were considered the best respondent to this variable because of the interaction they have had with the children over a period of time compared with the researcher's one-shot observation. The selected children were asked to deliver the questionnaire with a letter to their parents. The questionnaires

were also retrieved from parents through their children. The data were analysed using frequency, percentages, Pearson moment correlation coefficient, and multiple regression.

## Results

Table 1 shows the information retrieved from teachers with respect to their perception of children's level of adjustment. The 'agree' responses indicate areas where the children were identified to have adjusted easily; whereas, 'disagree' represent behaviors which children are finding difficult to exhibit as observed by their teachers. Particularly notable are the low agree percentages on items 1, 2, and 4 at 11.2%, 16.2%, and 19.7%, which show that the students are coming to school with few basic skills. Of concern is that 61.3% of the children seem immature for this grade, 75.7% of the children do not freely associate with their classmates, and 55.7% of them have difficulty attaching to their teacher.

Table 1
*Children's Adjustment in the Nursery School Setting According to Teachers' Perceptions*

| S/N | ITEMS | Agree (%) | Disagree (%) |
|---|---|---|---|
| 1. | Identify letters of the alphabet | 36 (11.2%) | 284 (88.7%) |
| 2. | Sing songs/recite rhymes | 52 (16.2%) | 268 (83.8%) |
| 3. | Identify shapes | 107 (34.1%) | 211 (66.0%) |
| 4. | Write letters of the alphabet a – e | 63 (19.7%) | 257 (80.3%) |
| 5. | Write numbers 1-20 | 97 (30.3%) | 223 (69.7%) |
| 6. | Ask questions on things that puzzle them | 117 (36.5%) | 203 (63.5%) |
| 7. | Child has difficulty following directives | 193 (60.4%) | 127 (39.7%) |
| 8. | Child has difficulty working as a part of a group | 280 (56.3%) | 140 (43.8%) |
| 9. | Child has difficulty working independently | 168 (52.5%) | 152 (47.6%) |
| 10. | Child appears immature for this grade | 196 (61.3%) | 124 (38.8%) |
| 11. | Other children do things he/she cannot do for him/her | 158 (43.3%) | 162 (50.7%) |
| 12. | Child has difficulty sitting quietly during story time | 162 (50.6%) | 158 (49.4%) |
| 13. | Child associates freely with other children | 78 (24.5%) | 242 (75.7%) |
| 14. | Child gets into trouble | 177 (56.0%) | 141 (44.1%) |
| 15. | Child is always sick whenever at school | 223 (69.8%) | 97 (30.4%) |
| 16. | Child cries whenever parents drops him/her off at school | 203 (63.5%) | 117 (36.5%) |
| 17. | Child has difficulty getting attached to me | 178 (55.7%) | 142 (44.4%) |
| 18. | Child has difficulty sharing things with other children | 153 (47.8%) | 167 (52.2%) |
| 19. | Child has difficulty respecting other children's emotions | 143 (44.8%) | 177 (55.3%) |
| 20. | Child has difficulty trusting adults and peers in school | 149 (43.6%) | 171 (53.4%) |

Table 2 shows how parents get involved in their child's education at school or at home. Sixteen of the items have an 'agree' response of 80% or better, and of those 16, nine of them have an 'agree' response of 90% or better. Although the responses seem low for items 11 and 13, it was expected that agree responses might be lower due to the way the items were worded. Item 11, which stated, "My child's learning is mainly left to the teacher and my child," the agree response was only 68.4%, and on item 13, "I expect my child to do his/her homework at school" had an agree response of only 54.7%, which was the lowest agree response of the 21 items.

Table 2
*Parents' Perception of their Involvement in the Children's Adjustment in School*

| S/N | Items | Disagree | Agree |
|---|---|---|---|
| 1. | I pay visits to my child's school when I can. | 51 (15.9%) | 269 (84.1%) |
| 2. | It is important that I let the teacher know about things that concern my child. | 8 (2.5%) | 312 (97.5%) |
| 3. | I find it helpful to talk with my child's teacher. | 11 (3.4%) | 309 (94.6%) |
| 4. | My child's teacher knows me. | 24 (7.6%) | 296 (92.5%) |
| 5. | I exchange phone calls or notes with my child's teacher. | 105 (32.8%) | 215 (67.2%) |
| 6. | I got advice from my child's teacher. | 32 (10.0%) | 288 (90.0%) |
| 7. | I contact my child's teacher with questions about school work. | 40 (12.5%) | 277 (86.5%) |
| 8. | I assume my child is doing all right when I don't hear anything from the school. | 64 (20.0%) | 256 (80.0%) |
| 9. | The teacher has to inform me about a problem before I visit the school. | 49 (15.3%) | 271 (84.7%) |
| 10. | I get most of my information about my child's progress from report cards. | 39 (12.2%) | 278 (86.8%) |
| 11. | My child's learning is mainly left to the teacher and my child. | 101 (31.6%) | 219 (68.4%) |
| 12. | I expect the school to notify me if my child has a problem. | 32 (10.0%) | 288 (90.0%) |
| 13. | I expect my child to do his/her homework at school. | 145 (45.3%) | 175 (54.7%) |
| 14. | I rely on the teacher to make sure my child understands his/her school work. | 85 (26.6%) | 235 (73.4%) |
| 15. | It is my job to explain new things in my child's take home assignments to him/her. | 57 (17.8%) | 263 (82.2%) |
| 16. | It is my job to make sure my child understands his/her assignments. | 31 (9.7%) | 289 (90.3%) |
| 17. | I make it a point of duty to provide all the necessary things needed by my child at school. | 79 (24.7%) | 241 (75.3%) |
| 18. | I monitor my child's progress in school. | 22 (6.9%) | 298 (93.1%) |
| 19. | I make sure that my child's homework gets done. | 17 (5.3%) | 303 (94.7%) |
| 20. | I talk to my child about what he/she is learning. | 14 (4.4%) | 306 (95.6%) |
| 21. | I take my child to the library, community events, or similar places. | 47 (14.7%) | 273 (85.3%) |

Table 3 shows the total number of respondents for the study with the mean ($\overline{X}$) and standard deviation for each of the predictor variables. The standard deviation of the variables used appear not to be too far away from their means except for adjustment level.

Table 3
*Descriptive Statistics of the Predictor Variables*

| S/N | Variables of Interest | Mean ($\overline{X}$) | Standard Deviation |
|---|---|---|---|
| 1 | Adjustment Level | 107.02 | 11.144 |
| 2 | Location | 1.49 | .513 |
| 3 | Child Gender | 1.46 | .499 |
| 4 | Position in Family | 2.31 | 1.151 |
| 5 | Marital Status | 2.03 | .454 |
| 6 | Religion | 1.32 | .829 |
| 7 | Educational Background | 3.93 | .830 |
| 8 | Occupation | 2.98 | .915 |
| 9 | Class Size | 1.44 | .497 |
| 10 | Material Provision | 1.34 | .474 |
| 11 | Number of Children in the home | 2.41 | .511 |
| 12 | Teacher Qualification | 3.84 | 1.477 |

N = 320

It can be observed from Table 4 that at $p < .05$; the intercorrelation matrix of the correlation coefficients of the predictors and the criterion variable are mostly significant; though some are positive while others are negative. The table shows that there is no multicollinearity between or among the variables of study. The table also

shows that there is a positive relationship between material provision and marital status of the pupil parents, parent's religion and parent's educational background. Findings from the study also reveal that teacher qualification is significant with child gender, class size and material provision. Other variables that correlate with each other include parent's religion and child gender, class size and child gender and also number of children at home and parent's occupation.

Table 4
*Intercorrelation Matrix of the Predictor Variables and the Criterion Variable*

| Variable | AL | LOC | CG | PIF | MS | REL | EDB | OCC | CS | MP | CH | TQ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adjust level | 1.000 | | | | | | | | | | | |
| Location | -.069 | 1.000 | | | | | | | | | | |
| Child gender | .001* | -.032* | 1.000 | | | | | | | | | |
| Posi in fam | -.116 | .160 | .003* | 1.000 | | | | | | | | |
| Marital status | -.089 | .041* | -.037* | .069 | 1.000 | | | | | | | |
| Religion | .177 | .078 | .009* | -.091 | .220 | 1.000 | | | | | | |
| Edu_backgrd | -.041* | -.041* | -.010* | .041* | -.029* | -.056 | 1.000 | | | | | |
| Occupation | .079 | -.130 | -.142 | -.040* | .008* | .069 | .044* | 1.000 | | | | |
| Class size | -.017* | -.629 | .021* | -.062 | -.104 | -.119 | .055 | .077 | 1.000 | | | |
| Material prov | .013* | .073 | -.088 | -.060 | .004* | .005* | .025* | .056 | -.123 | 1.000 | | |
| Child - Home | .088 | -.152 | .035* | .338 | .104 | .061 | .056 | .034* | .107 | -.003* | 1.000 | |
| Teacher qual | -.087 | -.299 | .021* | -.053 | .086 | .122 | -.114 | .191 | .020* | .047* | .063 | 1.000 |

* Significant @ $p < .05$; n =320

*Key for Table 4:* Adjustment level (AL), Child gender (CG), Posi in fam – position in family (PIF); Marital status (MS); Religion (REL); Edu backgrnd – educational background (EDB); Occupation (OCC); Class size (CS); material prov – material provision (MP); Child-Home (CH); Teacher qual – teacher qualification (TQ)

Table 5 shows the effect of the relationship that existed between the adjustment level of the Nigerian child at the school and their parent's involvement is revealed in the value of the coefficient of multiple regression (R) = .335, multiple regression square ($R^2$) = .112, and the adjusted R square = .080 with the standard error of the estimate at 10.686. This implies that 8% of the total variation in pupils' adjustment level at the school is attributable to the combined contribution of the predictor variables built into the regression model. The result further shows that $F(_{11,308})$ = 3.53, $p<0.05$ jointly allow for a reliable prediction of the variable. These factors significantly contributed to the prediction of child's adjustment level at the nursery school setting.

Table 5
*Factors Influencing Adjustment Level of Nigerian Children at the Nursery School Level*

| Model | Sum of square | Df | Mean square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 4440.452 | 11 | 403.677 | | |
| Residual | 35172.395 | 308 | 114.196 | 3.535 | .000 |
| Total | 3961.847 | 319 | | | |

Table 6 shows that only six out of the eleven predictor variables contributed significantly to the variance in the factors influencing the adjustment of children at the nursery school setting. The variables that contributed to the model are teacher's educational qualification [$\beta = -.188$, $t_{(308)} = -3.143$, $p< .05$], number of children in the home of a family [$\beta = .130$, $t_{(308)} = 2.191$, $p< .05$], parents' marital status [$\beta = .-.132$, $t_{(308)} = -2.364$, $p< .05$], material provision [$\beta = .199$, $t_{(308)} = 3.509$, $p< .05$], and location of the school [$\beta = -.176$, $t_{(308)} = -2.294$, $p< .05$]. The other variables: child gender, position in the family, parents' occupation, parents' educational

background, class size, and religion did not contribute statistically and significantly to the variance in the adjustment level of Nigerian child at the nursery school setting.

Table 6
*Relative Contribution of Factors Influencing the Adjustment Level of Nigerian Children at the Nursery School*

| Model | Unstandardized Coefficients | | Standard coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 121.211 | 7.761 | | 15.617 | .000 |
| Location | -3.813 | 1.662 | -.176 | -2.294 | .022* |
| Child Gender | .080 | 1.219 | .004 | .066 | .948 |
| Position in the family | -1.131 | .577 | -.117 | -1.961 | .051 |
| Marital status | -3.235 | 1.369 | -.132 | -2.364 | .019* |
| Material provision in school | 2.668 | .760 | .199 | 3.509 | .001* |
| Educational background | -.825 | .732 | -.061 | -1.127 | .261 |
| Occupation | 1.024 | .680 | .084 | 1.506 | .133 |
| Class size | -3.074 | 1.605 | -.137 | -1.915 | .056 |
| Family Religion | .199 | 1.286 | .008 | .155 | .877 |
| Nos. of children in the home | 2.829 | 1.291 | .130 | 2.191 | .029* |
| Teachers' Qualification | -1.418 | .451 | -.188 | -3.143 | .002* |

* Significant at $p < 0.05$

## Discussion

The success of any child in school could depend largely on the trust placed on the teacher. However, the result emanating from this study reveals that for a successful adjustment in the child's transition from home to an unfamiliar environment to take place, parents should assist the child to cope with the transition to a new and distinct environment. This can be attributed to the fact that the children are still very young, and they find it difficult to adjust to the school settings which is totally new and different from their familiar home environment. Edo-Olotu (2012) opined that parent-school partnership and adjustment of the child in early childhood education is necessary in the development of the child. It is believed that the progress of the child is the sole duty of the teacher, but in recent times, research has shown that other factors – family support, community influence, school factors, among others – are also attributable to a child's adjustment level at the school. Adjustment to schooling could thus be influenced by a variety of personal and family characteristics, societal trends, contextual, and life experiences.

The findings of this study revealed the contribution of parents and teachers in the adjustment of nursery school pupils in Rivers state, Nigeria. It reveals that the perception of parents about their child (children) and their level of involvement contribute positively towards the adjustment of their children in the school settings. This finding is in line with Kay (2003) who identified school factors, children's personal characteristics, and family as important influences on different school, behavioural, and academic aspects of a child's adjustment in their first year of schooling. It was also established from the study that most children are not ready for formal school learning at this age.

This study suggests that children need to bring cognitive and social skills from home to benefit from school. The home environment is expected to be the starting point of a child's cognitive development as well as inculcating social skills that could aid the child adjust to a new environment, such as the school. It has also been established in this study that it is better to encourage parents and teachers to work

together in helping a child to adjust. Teachers are seen as experts and the participation of parents in helping a child to adjust, will not undermine the teaching and learning process but boost it. This was supported Fasan (2012) whose opinion was that parental involvement in the school setting has a positive influence on the educational progress of a child.

For successful adjustment to school and for longer term development, children need parental and school support. The findings also revealed that teachers' expectations of children's adjustment to the nursery influences their judgment of children's problems. Rimm-Kaufman, Pianta, and Cox (2000) found out that teachers' judgment of the prevalence of child adjustment problems start at the nursery/kindergarten level. The beginning of pre-school is a critical and subtle period in a child's life that exposes him/her to so many dangers. The process of learning at this fragile stage is thus reflected in the developmental aspect of the child's life which could also be termed as the nature-nurture controversy.

It is evident that, with few exceptions, the child, family, and community factors affect children in making adjustments. Families carry a cumulative burden of other life issues possibly relegating their children's upbringing to the background. The school environment and teachers play a vital role in preparing children for the future. Children have to share the one adult's attention at school, and the daily schedule is more structured with more formal rules and routines than the children are used to in their homes. Children are faced with large groups of children of different ages and size especially during assembly and playtime, and they are confronted with the challenges of making new friends. These issues were manifested in the teachers' responses (items 7, 8, 9, 13, and 16, see Table 1). The interaction of the child's personal characteristics, child's position in the family, number of children in a child's family, the nature of adults working with children, and their experiences could help in determining how a child adjusts to school (Margetts, 2002).

Material provision also played a significant role in determining the adjustment level of nursery school children. Learning facilities are needed in good number and quality for children to adjust successfully to school. These resources act as stimulants for both the students and teachers. Because of this, school planners have continued to emphasize proper planning for facilities and equipment especially before the establishment of any school. The major task of educational administration is to provide adequate and appropriate learning facilities. The majority of parents who are aware of these issues, spend time searching for well-equipped schools with high quality facilities for the admission of their children because they know that learning materials help children adapt better when they can actively explore and dominate their environment rich in materials and interact informally with their teachers and peers. Academic environments lacking good resources may diminish the teachers' and students' motivation for learning. This finding suggests that a positive relationship exists between a school's setting in terms of resources and student's adjustment (adaptation). Facilities, if properly manipulated and utilized, could create a situation or an atmosphere in which curiosity to learn would be aroused (Amirize, 2000).

Successful adjustment to school, as reported by (Dockett, Perry & Tracey, 1997; Fabian, 2000), partly depends on past experiences and on children possessing the skills and knowledge to respond to the demands of the school setting. These studies also revealed that when children exhibit a range of social skills associated with cooperation, initiating interactions or assertion, and self- control, they are more

likely to adjust easily to school. However, it will be noted that children in this study find it difficult to trust adults who work with them and thus made their bonding with their teachers difficult. Children's inability to obey directives from their teachers may also be through lack of trust and why children in this study find it difficult to adjust in school. Findings from this study further support the stands of (Reynolds, Weissberg, & Kasprow, 1992) who posit that adjustment to schooling is influenced by a variety of personal and family characteristics, societal trends, contextual and life experiences.

## Conclusion

The parents of the pupils tend not to visit their children's school regularly thus not being involved as much as they could or should in the educational progress of their children. They also appear not to be aware of the importance of taking children out to interesting places to aid their school readiness. When young children come to school unused to structured learning, they may find it difficult to adjust to the school settings and activities. The best means to ensure that children enter school ready to learn could be through combined efforts of families and the school.

## References

Ajayi, K. (1989). Educational development and management in Nigeria since independence. Ibadan, Nigeria: Vintage Publications Ltd.

Amirize, B. (2000). Managing school plant. Owerri, Nigeria: Spring Field Publishers.

Bennett, P., Elliot, M., & Peters, D. (2005). Classroom and family effects on children's social and behavioural problems. *The Elementary School Journal*, *105*(5), 461–499.

Blatchford, P., Moriarty, V., Edmonds, S., and Martin, C. (2002). Relationship between class size and teaching: A multi-method analysis of English infant schools. *American Educational Research Journal, 39*(1), 101–132. doi: 10.3102/00028312039001101

Bradley, R. H., & Caldwell, B. M. (1976). The relation of infants' home environments to mental test performance at fifty four months: A follow-up study. *Child Development, 47*, 1172–1174. doi: 10.2307/1128457

Bradley, R. H., & Caldwell, B. M. (1977). Home observation for measurement and environment: A validation study screening efficiency. *American Journal of Mental Deficiency, 81*(5), 417–20.

Cleave, S., Jowett, S. & Bate, M. (1982). And so to school. A study of continuity from preschool to infant school. Great Britain: Nfer-Nelson.

Dockett, S., Perry, R. & Tracey, D. (1997, December). *Getting ready for school.* Paper presented at the Australian Association for Research in Education Annual Conference, Brisbane, Australia. Retrieved from http://files.eric.ed.gov/fulltext/ED421248.pdf

Edo-Olotu, A. U. (2012). T*he influence of parents-school partnership on the availability and utilization of learning resources in Ibadan South-West, LGA, Oyo state*. (Unpublished master's dissertation). University of Ibadan, Ibadan, Nigeria.

Elley, W. B. (Ed.). (1994). *The IEA study of reading literacy: Achievement and instruction in thirty-two school systems*. Bingley, United Kingdom: Emerald Group Publishing.

Erickson, J. (1997). The context of infant attachment in family childcare. *Journal of Applied Developmental Psychology, 20*(2), 319–336.

Fabian, H. (2000, August-September). *A seamless transition.* Paper presented at the EECERA 10th European Conference on Quality in Early Childhood Education, London.

Fasan, H. T. (2012). *Socio-psychological factors as predictors of students achievement in English reading comprehension in some secondary schools in Akure South LGA, Ondo state*. (Unpublished master's dissertation). University of Ibadan, Ibadan, Nigeria.

Goleman, C. P. (1995). Cause and casualty in daycare research: An investigation of group differences in Swedish care. *European Journal of the Psychology of Education, 11*, 231–245.

Gura, L. V. (1996). Infant daycare and children's social competence. *Infant Behavior and Development, 18*, 177–188.

Hall, K., & Nuttall, W. (2000). Class size and pedagogy: How might infant teachers in England respond to class size changes? *Education 3-13: International Journal of Primary, Elementary and Early Years Education, 28*(3), 52–57. doi: 10.1080/03004270085200341

Hallak, J. (1990*). Investing in the future setting educational priorities in the developing world.* Paris: UNESCO - IIEP.

Hungerford, A. & Cox, M. J. (2006). Family factors in childcare research. *Evaluation Review, 30*, 631–655. doi: 10.1177/0193841X06291532

Independent Education Union Australia (1997). Senate Employment, Education and Training References Committee Inquiry into Early Childhood Education. Submission from the Independent Education Union of Australia. Submissions. Available in http://www.ieu.org.au/policies/early.htm.

Kay .M. (2003, July). Personal, family and social influences on children's early school adjustment. Paper presented at the AECA Biennial Conference, Hobart, Australia.

Kinanee, J. B. (2010). *Psychology of human adjustment*. Port Harcourt, Nigeria: Alheribooks.

Majorobanks, K. 1999. *Families and their Learning Environment. An Empirical Analysis.*(Revised Edition) London, Routledge and Kegan Paul.

Margetts, K. (2002). The developing child in today's world: Issues and care in education. *Educare News, 127*(July), 10-13.

McLloyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*(2), 185–204.

Montessori, M. (1912). *The Montessori method: Scientific pedagogy as applied to child education in "the children's houses".* London: Heinemann.

National Association for the Education of Young Children. (1998). *Overview of learning to read and write: Developmentally appropriate practice for young children*. A joint position paper of the International Reading Association (IRA) and the National Association for the Education of Young Children (NAEYC). Retrieved from http://www.naeyc.org/resources/position_statements/psread

Napoli, M., Kilbride, C., & Tebbs, M. D. (1988). *Adjustment and growth in a changing world*. New York: West Publishing.

Nye, B., Hedges, L.V., & Konstantopoulos, S. (2000). The effects of small classes on academic achievement: The results of the Tennessee class size experiment. *American Educational Research Journal, 37*(1), 123–151.

Olwens, C. K. (1993). Early childcare and children's development prior to school entry. *American Educational Research Journal, 39*,133–164.

Pianta, L. C. & Walsh, D. (1996). The prediction of process quality from structural features of childcare. *Early Childhood Research Quarterly, 12*, 281–303.

Ramey, S. L., & Ramey, C. T. (1994). The transition to school: Why the first few years matter for a lifetime. *Phi Delta Kappan, 76*(3), 194–198.

Reynolds, A., Weissberg, R., & Kasprow, W. (1992). Prediction of early social and academic adjustment of children from the inner city. *American Journal of American Psychology, 20*(5), 599–624.

Rimm-Kaufman S. E., Pianta R. C., & Cox, M. J. (2000). Teachers' judgments of problems in the transition to kindergarten. *Early Childhood Research Quarterly, 15*(2), 147–166. doi: 10.1016/S0885-2006(00)00049-1

Roelke, C. (1996). Curriculum adequacy and quality in high schools enrolling fewer than 400 pupils (9-12). Retrieved from http://www.ericdigests.org/1997-2/high.htm

Russell, S. J. (2000). Developing computational fluency with whole numbers. Retrieved from http://www-tc.pbs.org/teacherline/courses/math250/pdfs/dev_comp_fluency.pdf

Schaefer, E. S., & Edgerton, M. (1995). Parent and child correlates of parental modernity. In I. E. Sigel (Ed.), *Parental belief systems: The psychological consequences for children* (pp. 287-318). Hillsdale, NJ: Erlbaum.

Shulman, L. S. (1986). Those who understand teach: Knowledge growth in teaching: *Educational Researcher, 57*(1), 1–22.

Varol, F., & Farran, D. (2006). Early mathematical growth: How to support young children's mathematical development. *Early Childhood Education Journal, 33*(6) 381–387. doi: 10.1007/S10643-006-0060-8

Wolfe, J. (2002). *Learning from the past: Historical voices in early childhood education* (2nd ed.). Alberta, Canada: Piney Branch Press.

## Author

**Monica Ngozi Odinko** is senior research fellow in the Institute of Education at the University of Ibadan, Ibadan, Nigeria. Her research focus is evaluation of early childhood education related matters.

# ASSESSMENT FOR LEARNING IN TEACHER EDUCATION PROGRAMS: NAVIGATING THE JUXTAPOSITION OF THEORY AND PRAXIS

Christopher DeLuca
Queen's University, Kingston, Ontario, Canada
and
Louis Volante
Brock University, Hamilton, Ontario, Canada

**Abstract:** This paper examines the challenges associated with promoting and modeling assessment for learning within initial teacher education programs. Based on their experiences teaching in a variety of higher education institutions within Canada and the United States and on a critical synthesis of literature, the authors identify three broad constraints that contribute to the current theory—praxis divide. Specifically, the article outlines temporal, programmatic, and institutional constraints that typically undermine the spirit of assessment for learning within initial teacher preparation programs. After documenting these constraints, the paper concludes with a research agenda for aimed at promoting more effective integration of assessment for learning in teacher education programs.

**Keywords:** assessment, assessment for learning, teacher education, constraints, challenges

## Introduction

The dichotomy between assessment *of* learning and assessment *for* learning (AFL) is widely recognized around the Western world (Assessment Reform Group, 2002; Popham, 2013). The former emphasizes assessment practices that serve an evaluative function, often at the end of a unit or term – examples include quizzes, tests, exams, essays, and projects. The latter emphasizes assessment practices that are ongoing and take place during a lesson or unit of study – examples include a journal reflection, a self-assessment of an oral performance, or a submission of a draft of a final assignment. Not surprisingly, both teacher candidates and practising teachers have traditionally attached more importance to summative assessments because they are utilized for grading purposes (Stobart, 2008). Nevertheless, research suggests that using a diverse array of AFL methods (also referred to as formative assessment) is most critical to promoting student success (Black & Wiliam, 1998; Hattie, 2009).

Although both types of assessment (formative and summative) provide important data for instructional planning, only AFL informs teachers about student learning at a point when timely adjustments to instruction can be made. AFL also invites students to be active participants in their own learning so that student engagement and motivation are increased (Willis, 2010). These advantages make AFL an essential characteristic of initial teacher preparation. The importance of AFL has been supported by empirical research over the last few decades. Four large reviews on the impact of AFL (Black & Wiliam, 1998; Crooks, 1988; Kluger & DeNisi, 1996; Natriello, 1987) have indicated that the consistent utilization of formative strategies such as questioning techniques, feedback without grades, peer assessment, self-assessment, and formative use of summative assessments can double the speed of student learning (see Wiliam, 2007). The previously noted meta-analyses also suggested that AFL reduces the achievement gap by helping low achievers the most (Black & Wiliam, 1998).

However, in order to encourage teachers to adopt AFL into their teaching practice, they must be given opportunities to learn about assessment within their teacher education program (Stiggins, 1999, 2002). However, few teachers are provided with sufficient, direct instruction in assessment to yield assessment competent teachers (MacLellan, 2004; Stiggins, 1999; Volante & Fazio, 2007)) with general curriculum or educational studies courses minimally addressing AFL concepts (DeLuca & Klinger, 2010). Despite a lack of formal provisions for assessment education, teacher candidates could learn about assessment through teacher educators' modelling of AFL practices. However, as recognized by Taras (2007), the structure of preservice and other higher education programs deter the effective integration of AFL, leading to a dominantly summative assessment context for teaching and learning.

In this paper, we study the challenges associated with promoting and modeling AFL within initial teacher education programs. Based on our personal experiences teaching in five higher education institutions within Canada and the United States, we identify three broad constraints that contribute to the current theory–praxis divide: (a) temporal constraints, (b) programmatic constraints, and (c) institutional constraints. We describe each of these constraints as a basis for promoting more effective integration of AFL within initial teacher education programming.

## Promoting Assessment for Learning through Teacher Education

A variety of teacher education program options exist accredited by various state/provincial, local, and national agencies across the US and Canada leading to teacher certification (Crocker & Dibbon, 2008; Gambhir, Broad, Evans, & Gaskell, 2008; Zeichner & Conklin, 2005). This variety of programming contributes to multiple approaches for assessment education with varied commitment to promoting AFL mandates. In recently revised US national level accreditation standards, supporting teacher candidates' assessment literacy development has become a primary focus. In the most recent accreditation standards issued by National Council for Accreditation of Teacher Education [NCATE] (2008), the largest accreditor of teacher preparation programs, the following benchmark for graduates of teacher education programs was identified:

> Teacher candidates are expected to focus on student learning and study the effects of their work. They assess and analyze student learning, make appropriate adjustments to instruction, monitor student learning, and have a positive effect on learning for all students. (p. 19)

In 2010, NCATE issued a paper entitled, *Assessment as a Critical Element in Clinical Experiences for Teacher Preparation*, in which they not only prioritized assessment as a focus of preservice learning but also recommended that, "candidates be presented with multiple and rich course material in their preparation that will enable them to become assessment-literate and data-wise" (p. 21). In order to meet assessment literacy standards, teacher education programs utilize a variety of approaches including explicit, integrated, and blended assessment education models (DeLuca & Klinger, 2010). Explicit and discrete coursework in assessment has proven the most valuable in promoting teacher candidate assessment literacy when contrasted to integrated approaches in which teacher candidates learn about assessment in general curriculum or educational studies courses. A blended model provides both direct instruction in assessment and additional learning opportunities in general education courses. The majority of explicit assessment courses offered across preservice programs are one

semester in duration and serve to provide an introduction to assessment policies and practices (Gambhir et al., 2008; Greenberg & Walsh, 2012).

Research on the value of preservice assessment education and specifically explicit assessment courses has resulted in mixed-results. Quantitative measures of teacher candidate perceived assessment literacy (or proxy constructs such as confidence, attitude, or competence in assessment) point to strengths and weaknesses in candidates' readiness for assessing student learning. Campbell, Murphy, and Holt (2002) administered a scenario-based version of the Teacher Competencies Assessment Questionnaire (TCAQ; see Plake, Impara, & Fager, 1993, for description of original TCAQ) to 220 undergraduate students who had enrolled in a teacher education measurement course. Questions on the TCAQ were based on the Standards for Teacher Competency in Student Assessment (American Federation of Teachers, National Council on Measurement in Education, & National Education Association, [AFT, NCME, & NEA], 1990), which articulated seven principles related to assessment selection, design, administration, scoring, and interpretation. Based on their analysis, Campbell et al. (2002) found that teacher candidates' confidence differed across the seven principles, with teacher candidates most confident on standard one (i.e., choosing appropriate assessments to measure student learning) and least confident on standard six (i.e., communicating results to educational stakeholders). Similar results have been paralleled in other quantitative studies (e.g., Chen, 2005; DeLuca & Klinger, 2010).

In contrast, qualitative studies on teacher candidates' conceptualizations generally characterize graduates as less prepared for assessing student learning. Through her analysis of 30 personal statements on assessment, MacLellan (2004) found that while teacher candidates were able to express various assessment purposes and formats, their articulation of assessment theory and related issues (i.e., reliability, comparability, validity, and fairness) were highly limited. MacLellan concluded that teacher candidates in her study maintained low levels of assessment literacy, which she cautioned could result in negative and detrimental classroom assessment practices. Significantly, MacLellan found that teacher candidates' knowledge on assessment was largely compartmentalized so that connections between formative (i.e., AFL) and summative (i.e., assessment of learning) purposes of assessment were not well developed.

Volante and Fazio (2007) drew a similar conclusion based on the responses of 69 teacher candidates to their assessment literacy questionnaire, which maintained both open- and closed-ended items. Specifically, they noted that teacher candidates primarily referred to summative assessment activities (i.e., grading, tests, and report cards) in their responses, and to a much lesser extent, on formative assessment activities (e.g., informal questioning, conversations, and conferences). As a result, Volante and Fazio cautioned "teacher education programs that provide specific courses on assessment and evaluation…should not necessarily assume their teacher candidates are graduating with an acceptable level of assessment literacy to assess and evaluate students effectively" (p. 761). They further asserted the need for a concerted effort on the part of teacher education programs to "reduce the number of teacher candidates graduating with sizable knowledge gaps in this important field" (p. 762).

In addition to qualitative and quantitative studies on the effectiveness of preservice assessment education, assessment course syllabi have been systematically analyzed by the National Council on Teacher Quality (Greenberg & Walsh, 2012) and by DeLuca

and Bellara (2013). Greenberg and Walsh (2012) examined 455 assessment course syllabi from over 180 teacher education programs (mainly public) across 30 states. Each syllabus was analyzed for its address of three domains of assessment knowledge: (a) assessment literacy (i.e., teachers' ability to measure student performance using assessments); (b) analytical skills (i.e., teachers' ability to analyze assessment data); and (c) instructional decision-making (i.e., teachers' ability to plan instruction based on assessment information). Results indicated that assessment courses addressed the assessment literacy domain better than the latter two domains, with coursework only providing the "most basic tools for analysis of assessment data and then primarily from classroom assessment" (p. 15) and rely more heavily on curriculum or general education courses to educate teachers on how assessment can be used to inform instruction. Overall, Greenberg and Walsh concluded that while assessment was addressed in 175 out of 180 programs examined, only six programs (3 percent) provided preparation deemed *adequate*.

In a similar analysis of assessment course syllabi, DeLuca and Bellara (2013) analyzed the alignment of syllabi content from NCATE certified programs in Florida with NCATE and state accreditation standards and professional standards in educational assessment (i.e., JCSEE, 2015; AFT, NCME, & NEA, 1990). DeLuca and Bellara's method involved analyzing alignment across three dimensions: (a) content focus, (b) depth of knowledge, and (c) range of knowledge. Results suggested that while there are points of alignment across syllabi, accreditation policies, and professional standards (e.g., a consistent emphasis on assessment processes and fairness issues) there were also points of misalignment (e.g., emphasis and focus on various assessment purposes including AFL, and on communication of assessment information). They concluded by asserting that the variability in accreditation policies, standards of practice, and other influences on preservice assessment education contribute to different foci and content for the preparation of teachers.

Accordingly, across previous literature on assessment education there is consistent evidence that preservice programs may not be preparing teachers as effectively as possible for assessing student learning. Several barriers and practices exist in preservice program that limit the teaching and learning of assessment theory and the modeling of effective assessment practices for teacher candidates.

## Understanding the Theory—Praxis Divide

It has been generally acknowledged that classroom teachers' assessment practices lag behind the current research base – particularly in relation to AFL. The reasons for this disconnect are multifaceted and typically relate to the conservative culture of schools and lack of appropriate professional development (see Popham, 2013; Volante, 2010; Wiliam, 2011). This disconnect naturally extends to preservice teachers who are often socialized by cooperating teachers and placement schools. As Graham (2005) described, "preservice students are more likely to succumb to their apprenticeships of observation," and in doing so, "seemed doomed to replicate more traditional, unexamined assessment practices" (p. 619). Breaking out of this cyclical process requires a teacher education experience that challenges established, and in some cases, entrenched teaching practices. Teacher educators need to model a range of assessment methods within their own coursework so that preservice students can begin to construct a deeper understanding of the utility of different assessment approaches (Allen & Flippo, 2002; James & Pedder, 2006). It is through this experiential approach that teacher candidates can begin to unlearn their negative conceptions of assessment and

reformulate assessment as a positive process in teaching and learning (Earl, 2012; Harlen & Gardner, 2010).

Taras (2002) asserted, "academic processes, by their very nature, need coherence between theory and practice. This is part of the ethos that we inculcate in our students. The least we can do is to attempt to adhere to these principles ourselves" (p. 508). However, reforming teacher education programs so that they model and infuse AFL practices is particularly difficult given various constraints that typically confront teacher educators. In particular, we articulate three persistent constraints that impact the theory-practice divide: (a) temporal constraints, (b) programmatic constraints, and (c) institutional constraints.

**Temporal Constraints**

Consistently, researchers and educators have recognized that developing a learning culture that values AFL takes time. While procedural implementation of AFL practices is relatively simple, shifting teacher candidates' orientation toward assessment and meaningfully integrating AFL as pedagogical orientation is more challenging. These two modes of AFL integration reflect an enactment of the letter of AFL versus the spirit of AFL (Marshall & Drummond, 2006). In their in-depth, video analysis of teachers' enactment of AFL, Marshall and Drummond found that teachers who embraced the spirit of AFL involved students more fully and more authentically in learning through assessment. In this way, students' adopted AFL and valued assessment as a structure that promoted autonomy, collaboration, and feedback-driven learning. Similarly, in Willis's (2010) examination of three Australian classrooms, he found that when AFL was adopted with a spirit of promoting participation, it served to enhance the learning culture and promote student achievement. In particular, Willis identified that changes in teachers' perceptions of AFL as a pedagogical orientation rather than a series of prescribed assessment steps enabled students and teachers to develop a shared understanding of teaching and learning processes and goal, which lead to a participatory community of practice within the classroom. However, developing this assessment-based culture of learning in which both students and teachers adopt the spirit of AFL required a fundamental pedagogical orientation toward the spirit of AFL and continuous use of AFL practices over long periods of time.

Applied to teacher education programming, this finding poses a significant challenge for teacher educators' who aim to adopt the spirit of AFL. Given relatively short on-campus periods attributed to generally short program durations (i.e., 8-months to 2-years) with interjected practicum blocks, teacher candidates may be inconsistently exposed to AFL pedagogy. As a result, there may be insufficient time to develop an assessment-based culture of learning within teacher education programs. This issue is further problematized due to the fact that teacher candidates often enter preservice programs with firmly held, often negative, beliefs about assessment. In advocating for AFL-based teaching and learning, Torrance (2007) noted that "attention must be paid to the development of tutors' and assessors'… and the nature of their relationships with learners, so that learners are inducted into communities of practice" (p. 292). Thus in relatively short periods of learning, teacher educators are challenged to not only adopt an AFL pedagogical orientation but also change teacher candidates' perspectives on assessment in order to cultivate communities of learners that value assessment.

In addition to the challenge of developing an assessment-based culture of learning, short on-campus periods limit the learning benefits of AFL for teacher candidate. In particular, several studies have indicated that using assessment as learning to

promote metacognitive development requires extended use of learner-driven assessment practices (Earl, 2006, 2012; Willis, 2010). Specifically, assessment as learning involves students in developing habits of self-reflection, goal setting, and learning plans so that students learn how to learn (Marshall & Drummond, 2006). Developing professional learning skills in teacher candidates is critically important given current accreditation and competency standards that require teachers to engage in continuous professional learning anchored on principles of self-reflection, action inquiry, and planning for learning (Cochran-Smith & Lytle, 2009; Craig, 2010). However, research indicates that teacher candidates struggle to develop a professional learning orientation (DeLuca, Chavez, Bellara, & Cao, 2013; Klinger, Shulha, Luu, Ma, & Lam, 2013). One of the central reasons for this finding is that teacher candidates do not have sufficient exposure to high-quality assessment as learning during their preservice program. More concerning is that if teachers do not learn to develop these professional learning skills during their preservice year(s), they will be limited in their ability to use assessment as learning strategies to enhance and support their students' learning (Earl, 2006).

In our experiences, short on-campus periods of consecutive teacher education programs limit teacher educators' abilities to model and adopt a spirit of AFL in their courses. As a result, teacher candidates may not be experiencing effective cultures of learning that value assessment-driven teaching and learning. Without this experiential knowledge, we contend that teacher candidates who hold negative views of assessment will continue to use assessment practices predicated on their previous experiences rather than on more contemporary and formative conceptions of assessment.

**Programmatic Constraints**

Program coherence has long been recognized as an essential feature of effective teacher education programs (Darling-Hammond, 2006a, 2006b). When faculty members promote a shared vision––based on teacher education research—the likelihood of providing a successful teacher candidate experience is greatly enhanced. Unfortunately, program coherence with respect to AFL theory and practice is often an elusive feature in teacher education programs. Our experiences working in North America suggest university faculties' knowledge and understanding of AFL and their ability to integrate AFL into their courses is limited. Indeed, given the uneven range of expertise in this area, teacher candidates are likely to encounter conflicting views on AFL practices within university and practicum settings. Those faculty members who are charged with teaching assessment courses may find themselves in the unenviable position of re-teaching material or confronting faulty notions of AFL held by their colleagues and by practicum teachers.

Ideally, we advocate for a blended approach to assessment education in which teacher candidates receive discrete, focused instruction in assessment whilst engaging in integrated learning of assessment within other education courses (i.e., curriculum or professional studies courses). However, this approach can be counterproductive if faculty members in general education and assessment-specific courses promote divergent and contradictory messages about assessment. This contradiction is doubled when messages about assessment during practicum are further misaligned with faculty-based teachings. In such instances, teacher candidates are left without an educational space to negotiate and reconcile conflicting understandings about assessment. In their study, DeLuca and Klinger (2010) asked teacher candidates across secondary and elementary panels to

identify the primary site for learning about assessment. Nearly all teacher candidates who had taken an assessment specific course identified the assessment course as their principal site of learning while those who had not taken an assessment course identified their practicum and curriculum courses as focal sites for their learning. This finding is problematic because research has clearly identified that students enrolled in an assessment course have qualitatively different conceptions and understandings about AFL, and assessment generally, compared to those who solely take curriculum courses or engage in practicum experiences (Campbell et al., 2002; Chen, 2005). Thus although assessment courses are beneficial, the current siloed nature of preservice coursework and practicum experiences and variable faculty knowledge about AFL pose significant threats to cultivating congruent learning about AFL amongst teacher candidates.

It seems imperative that faculty members be provided with appropriate professional development on AFL in order to effectively support teacher candidate learning. Ideally, these professional development experiences would provide timely adjustments in both the content and pedagogy of university courses so that AFL becomes a pervasive feature across initial teacher education coursework with consistent messages about AFL in discrete and integrated courses. The availability of appropriate professional development must naturally extend to cooperating teachers since the practicum is essential for making connections between theory and practice. Although AFL is rapidly emerging as a critical component of successful schools, practicing teachers tend to have a rudimentary and often superficial understanding of how to properly infuse these practices in their classroom (Klinger, Volante, & DeLuca, 2012). Earl, Volante, and Katz (2011) argued for policy support, organizational structures, and professional learning that provides deep engagement with the new ideas associated with AFL so that practising teachers can move from the 'letter' to the 'spirit' of AFL.

In addition to supporting faculty members' and practicum teachers' learning about AFL, there is a need to establish a structure for teacher candidate learning that enables them to bridge experiences across their preservice program and consolidate their assessment learning. Drawn from contemporary professional learning theory, the structures of collaborative inquiry (CI) and professional learning communities (PLCs) may have value for this purpose. CI and PLCs are structures that engage educators in jointly learning about an aspect of their practice with the aim of improving student learning (Cordingley, Bell, Thomason, & Firth, 2005; Donohoo, 2013). Often, CI and PLCs integrate student performance data, reflections on teaching practice, and expert knowledge to promote teacher effectiveness through goal-directed, collaborative learning. Used in preservice programs, CI and PLCs would engage teacher candidates in self-directed, professional dialogues that integrated their practicum experiences with expert assessment knowledge (i.e., faculty members, practicum teachers, resources) to better understand the pedagogical benefits of AFL on both student learning and teaching practice.

In her review of powerful teacher education programs, Darling-Hammond (2006b) identified one pre-service program that integrated CI as a core program feature to promoted teacher candidates' abilities to collaborate, engage in ongoing assessment of their work and learning, and establish a network of support and approach for continued professional development. The CI initiative bridged various stakeholders to support and connected teacher candidate learning from otherwise isolated experiences resulting in "new organizational roles, arrangements, and distributions of responsibility and resources

among schools, districts, and the university" (Darling-Hammond, 2006b, p. 53). When focused on AFL, CI and PLCs not only enable teacher candidates to negotiate their learning across program experiences but also practice and develop professional learning skills, which are at the very heart of assessment *for* and *as* learning practices.

**Institutional Constraints**

There is increased recognition that institutional policies and mandates shape systemic adoption of AFL (Earl et al., 2011; Taras, 2007). In particular, we have identified two dominant institutional constraints that limit AFL in teacher education programs. First, there is a need for institutions to reconcile systemic accountability mandates with a formative focus in teaching and learning. Second, institutions need to implement grading policies and practices that do not undermine the spirit of AFL. These two constraints operate within both teacher education programs and the K-12 public education system. As such, teacher candidate learning about AFL can be limited given their pre-service experiences within both these systems of education.

Accountability mandates are often operationalized through an increase in summative assessments and the tracking of student performance over time (Koretz & Hamilton, 2006; Stobart, 2008). Emphasizing growth in student achievement (often measured through external, standardized assessments) has the potential to encourage a culture of assessment driven by and focused on summative assessment (Taras, 2005; Torrance, 1993; Wiliam, 2000). AFL researchers have endeavored to argue for a balancing of formative and summative assessments within the dominant standards-based, accountability paradigm of education, recognizing that "that overall standards and individual performance may be improved by actually emphasizing formative assessment" (Gardner, 2006, p. 198). Further, Taras (2005, 2007) asserted that the processes of formative and summative assessments need not be different; rather, it is the degree of feedback students receive and the grade-component of summative assessments that distinguishes these forms of assessment. Despite the overall benefits of AFL on increasing student achievement, institutions rarely implement policies on AFL use.

Linked to developing policies aimed at AFL is the revisioning of summative assessments to encourage opportunities for students to integrate feedback and improve their learning. Sadler (2010) described three fundamental assumptions about grading pervasive across higher education contexts that limit the fidelity, implementation, and adoption of AFL. We would argue that these assumptions apply equally to K-12 public education. First, Sadler recognized that students do not take seriously learning activities or assessments tasks that do not contribute to their final grade. Second, students regard grades as fungible, where all grades are of equal weight and worth. Third, formative and summative assessments are often conflated, with formative tasks assigned grades despite their intention to formatively support learning. Sadler notes that these assumptions pose significant threats to "creating alternative approaches to the design of course assessment programmes that serve both formative and summative purposes" (p. 739). Accordingly, we assert that in order for AFL to effectively integrate into teacher education programming, faculty members and cooperating teachers not only need to know the difference between formative and summative assessment, but they must also work to dismantle the assumptions that hinder the adoption of AFL processes. As mentioned earlier, this task is particularly difficult given the variability of instructors,

contexts, and beliefs that teacher candidates encounter in their relatively short professional programs.

## Conclusion

In this paper, we have argued for greater integration of AFL throughout teacher education programs. By analyzing temporal, programmatic, and institutional constraints, we have identified recurring trends that may impact local teacher education programs. Underpinning this argument is our primary assumption that when teacher candidates experience AFL, consistently and effectively, they are more likely to create a spirit of AFL in their own classrooms. Hence not only will the integration of AFL support teacher candidate learning throughout initial teacher education programs, but it will potentially also extend to the learning of K-12 students across educational systems.

Confronting temporal, programmatic, and institutional constraints that limit the preparation of assessment literate teacher candidates is a daunting task—particularly when one considers the range of accreditation standards across North America and the numerous educational contexts in which teacher education programs operate. These persistent constraints require more attention through focused research. Hence we suggest that future research explore diverse methods for working within and around the identified constraints to provoke greater AFL integration. In particular, we assert the following questions as a basis for future studies:

- How can programs stimulate greater coherence in the teaching of AFL between on-campus and practicum components?
- What structures can be used to enhance the professional knowledge of teacher educators in the area of AFL?
- How can universities establish better linkages between formative and summative assessments within courses, and increase value of AFL-practices?
- What are the influences of university policies aimed at AFL-based teaching on the modeling of AFL practices for teacher candidates?

We also suggest that pre-service programs and teacher educators might use the identified constraints to systematically evaluate their own teacher education programs, as not all constraints will manifest across programs. Program evaluation strategies, such as a SWOT analysis, might prove useful in identifying local program strengths, weaknesses, opportunities, and threats to AFL integration.

Overall, this paper is intended to provide a critical review of literature on the promotion of AFL within preservice teacher education programs. The identified constraints provide a heuristic for systematically evaluating areas in which AFL integration could be enhanced with the ultimate aim of provoking greater AFL practices in our teacher education program.

## References

Allen, D. D., & Flippo, R. F. (2002). Alternative assessment in the preparation of literacy educators: Responses from students. *Reading Psychology, 23*, 15–26.

American Federation of Teachers, National Council on Measurement in Education, National Education Association. (1990). *Standards for teacher competence in educational assessment.* Retrieved from: http://www.unl.edu/buros/bimm/html/article3.html.

Assessment Reform Group. (2002). *Assessment for learning: Research-based principles to guide classroom practice.* University of Cambridge, UK: Assessment Reform Group.

Black, P., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 139–148.

Campbell, C. M., Murphy, J. A., & Holt, J. K. (2002, October). *Psychometric analysis of an assessment literacy instrument: Applicability to pre-service teachers*. Paper presented at the annual meeting of the Mid-Western Educational Research Association, Columbus, OH.

Chen, P. (2005). Teacher candidates' assessment literacy. *Academic Exchange Quarterly, 62*(5), 62–66.

Cochran-Smith, M., & Lytle, S. L. (2009). *Inquiry as stance: Practitioner research for the next generation.* New York, NY: Teachers College, Columbia University.

Cordingley, P., Bell, M., Thomason, S., & Firth, A. (2005). *The impact of collaborative continuing professional development (CPD) on classroom teaching and learning. Review: How do collaborative and sustained CPD and sustained but not collaborative CPD affect teaching and learning?* London, UK: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Craig, C. J. (2010). Reflective practice in the professions: Teaching. In N. Lyons (Ed.), *Handbook of reflection and reflective inquiry: Mapping a way of knowing for professional reflective inquiry* (pp. 189-214). New York, NY: Springer.

Crocker, B., & Dibbon, D. (2008). *Teacher education in Canada.* Kelowna, BC: Society for the Advancement of Excellence in Education.

Crooks, T. J. (1988). The impact of classroom evaluation practices on students. *Review of Educational Research, 58*, 438–481.

Darling-Hammond, L. (2006a). Constructing 21st-century teacher education. *Journal of Teacher Education, 57*, 1–15.

Darling-Hammond, L. (2006b). *Powerful teacher education: Lessons from exemplary programs.* San Francisco, CA: Jossey-Bass.

DeLuca, C., & Bellara, A. (2013). The current state of assessment education: Aligning policy, standards, and teacher education curriculum. *Journal of Teacher Education, 64*(4), 356–372.

DeLuca, C., Chavez, T., Cao, C., & Bellara, A. (2013). Changing Conceptions of Assessment: Pedagogies for Pre-service Assessment Education. *The Teacher Educator, 48*(2), 128–142.

DeLuca, C., & Klinger, D. A. (2010). Assessment literacy development: Identifying gaps in teacher candidates' learning. *Assessment in Education: Principles, Policy & Practice, 17*(4), 419–438.

Donohoo, J. (2013). *Collaborative inquiry for educators: A facilitator's guide to school improvement*. Thousand Oaks, CA: Corwin.

Earl, L. (2006). Assessment as learning. In W. D. Hawley & D. L. Rollie (Eds.), *The keys to effective schools: Educational reform as continuous improvement* (pp. 85–98). Thousand Oaks, CA: Sage.

Earl, L. (2012). *Assessment as learning: Using classroom assessment to maximize student learning* (2nd ed). Thousand Oaks, CA: Corwin.

Earl, L., Volante, L., & Katz, S. (2011). Unleashing the promise of assessment for learning. *Education Canada, 51*(3), 17–20.

Gambhir, M., Broad, K., Evans, M., & Gaskell, J. (2008). *Characterizing initial teacher education in Canada: themes and issues.* Toronto, ON: University of Toronto, Ontario Institute for Studies in Education.

Gardner, J. (2006). Assessment for learning: A compelling conceptualization. In J. Gardner (Ed.), *Assessment and learning* (pp. 197–204). London: Sage.

Graham, P. (2005). Classroom-based assessment: Changing knowledge and practice through preservice teacher education. *Teaching and Teacher Education, 21*, 607–612.

Greenberg, J., & Walsh, K. (2012). *What teacher preparation programs teach about k-12 assessment: A review.* Washington, DC: National Council on Teacher Quality.

Harlen, W., & Gardner, J. (2010). Assessment to support learning. In J. Gardner, W. Harlen, L. Hayward, G. Stobart, & M. Montgomery (Eds.), *Developing teacher assessment* (pp. 15–28). New York: Open University Press.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* London, UK: Routledge.

James, M., & Pedder, D. (2006). Professional learning as a condition for assessment for learning. In J. Gardner (Ed.), *Assessment and learning* (pp. 27–44). London, UK: Sage.

Joint Committee on Standards for Educational Evaluation. (2015). *Classroom assessment standards.* Thousand Oaks, CA: Corwin.

Klinger, D. A., Shulha, L. M., Luu, K., Ma, J., & Lam, C. Y. (2013, April-May). *How can I teach what I do not know? Revealing the purpose of assessment for learning through a self-regulated learning cycle.* Paper presented at the 2013 Annual Meeting of the American Educational Research Association, San Francisco, CA.

Klinger, D. A., Volante, L., & DeLuca, C. (2012). Building teacher capacity within the evolving assessment culture in Canadian Education. *Policy Futures in Education, Special Issue: Developing Sustainable Assessment Cultures in School Learning Organisations, 10*(4), 447–460.

Kluger, A. N., & DeNisi, A. (1996). The effects of feedback intervention on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin, 119*(2), 254–284.

Koretz, D., & Hamilton, L. (2006). Testing for accountability in k-12. In R. L. Brennan (Ed.), *Educational measurement* (4th ed., pp. 531–578). Westport, CT: American Council on Education/Praeger.

MacLellan, E. (2004). Initial knowledge states about assessment: Novice teachers' conceptualizations. *Teaching and Teacher Education, 20*, 523–535.

Marshall, B., & Drummond, M. J. (2006). How teachers engage with assessment for learning: Lessons from the classroom. *Research Papers in Education, 21*(2), 113–149.

National Council for Accreditation of Teacher Education. (2008). *It's all about student learning: Assessing teacher candidates' ability to impact p-12 students.* Washington, DC: Author.

National Council for Accreditation of Teacher Education. (2010). *Assessment as a critical element in clinical experiences for teacher preparation.* Retrieved from: http://www.ncate.org/LinkClick.aspx?fileticket=oo50CSYDEFM%3D&tabid=715

Natriello, G. (1987). The impact of evaluation processes on students. *Educational Psychologist, 22*(2), 155–175.

Plake, B., Impara, J., & Fager, J. (1993). Assessment competencies of teachers: A national survey. *Educational Measurement: Issues and Practice*, *12*(4), 10–21.

Popham, W. J. (2013). *Classroom assessment: What teachers need to know* (7th ed.). Boston, MA: Pearson.

Sadler, D. R. (2010). Fidelity as a precondition for integrity in grading academic achievement. *Assessment & Evaluation in Higher Education, 35*, 727–743.

Stiggins, R. (1999). Evaluating classroom assessment training in teacher education programs. *Educational Measurement: Issues and Practice, 18*(1), 23–27.

Stiggins, R. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan, 83*, 758–765.

Stobart, G. (2008). *Testing times: The uses and abuses of assessment.* Milton Park, UK: Routledge.

Taras, M. (2002). Using assessment for learning and learning from assessment. *Assessment & Evaluation in Higher Education, 27*(6), 501–510.

Taras, M. (2005). Assessment – summative and formative – some theoretical reflection. *British Journal of Educational Studies, 53*(4), 466–478.

Taras, M. (2007). Assessment for learning: Understanding theory to improve practice. *Journal of Further and Higher Education, 31*(4), 363–371.

Torrance, H. (1993). Formative assessment: Some theoretical problems and empirical questions. *Cambridge Journal of Education, 23*, 333–343.

Torrance, H. (2007). Assessment as learning? How the use of explicit learning objectives, assessment criteria and feedback in post-secondary education and training can come to dominate learning. *Assessment in Education: Principles, Policy & Practice, 14*(3), 281–294.

Volante, L. (2010). Assessment *of*, *for*, and *as* learning within schools: Implications for transforming classroom practice. *Action in Teacher Education, 31*(4), 66–75.

Volante, L., & Fazio, X. (2007). Exploring teacher candidates' assessment literacy: Implications for teacher education reform and professional development. *Canadian Journal of Education, 30*(3), 749–770.

Wiliam, D. (2000, November). *Integrating summative and formative functions of assessment*. Keynote address to the European Association for Educational Assessment, Prague: Czech Republic.

Wiliam, D. (2007). Content *then* process: Teacher learning communities in the service of formative assessment. In D. B. Reeves (Ed.), *Ahead of the curve: The power of assessment to transform teaching and learning* (pp. 183–204). Bloomington, IN: Solution Tree Press.

Wiliam, D. (2011). What is assessment for learning? *Studies in Educational Evaluation, 37*(1), 3–14.

Willis, J. (2010). Assessment for learning as a participatory pedagogy. *Assessment Matters, 2*, 65–84.

Zeichner, K. M., & Conklin, K. (2005). Teacher education programs. In M. Cochran-Smith & K. Zeichner (Eds.), *Studying teacher education: The report of the AERA panel on research and teacher education* (pp. 645–736). Mahwah, N.J.: Lawrence Erlbaum Associates.

## Authors

**Christopher DeLuca,** Ph.D., is an Associate Professor and Graduate Faculty member in Classroom Assessment and Curriculum Studies at the Faculty of Education, Queen's University, Kingston, Ontario, Canada. His research examines the complex intersection of curriculum and pedagogy as operating within frameworks of educational assessment and educational inclusivity.
(Retrieved from http://educ.queensu.ca/faculty/profiles/deluca.)

**Louis Volante**, Ph.D., is a Professor of Education at Brock University, Hamilton, Ontario, Canada. His research interests include global governance of education, international achievement studies, migrant integration and student achievement, education policy analysis, and education reform and innovation.
(Retrieved from https://brocku.ca/education/directory/teachered/dvolante.)

# PROFESSIONAL RESPONSIBILITY OF SCHOOL TEACHERS IN PUBLIC EDUCATION: AN ANALYSIS OF GERMAN EDUCATIONAL ADMINISTRATION FROM A JAPANESE PERSPECTIVE

Kemma Tsujino
Joetsu University of Education, Japan

**Abstract**: *The characteristics of the modern school system, which integrates children into a "nation state," have been radicalized throughout history, especially in Japan and Germany. This research aims to clarify German and Japanese paradigms in public education through a focus on the roles of school teachers. The research asks: what is the professional responsibility of a school teacher and what is outside of a teacher's responsibility? Under today's democratic and constitutional welfare-state, reconsideration of the distributed structure of governance in public education is needed. Through document analysis and fieldwork in Germany, with a comparative educational interest from Japan, the article specifies certain differences and similarities between the two contexts. Responsibilities in public education should be understood as distributed among, most notably, teacher, local school administration, and central school administration.*

**Key words**: state supervision, school autonomy, educational participation, pedagogical freedom, Germany, outsider's viewpoint, Japan

## Criticisms Regarding the Teacher Professional Development Policy

In 2009 in Japan, the teaching profession as an occupation of lifetime employment was outmoded by the introduction of the teacher certificate renewal system. During the National Conference of Educational Reform (*Kyoikukaikaku-Kokuminkaigi*), the advisory committee under the Prime Minister made a motion to return to the 2000-2001 proposal, using the slogan "Removal of Unfit Teachers" at the beginning of the motion. At the same meeting, schools were likened to a restaurant "that continually serves awful tasting food yet customers still come" (National Conference of Educational Reform interim report, July 26, 2000).

In this context, *Teacher Professional Development* has recently become a big policy slogan. However, the responsibilities for school education do not rest with teachers alone, but also with the different levels of educational administration such as the state, prefecture, and municipal governments. Nevertheless, in the policy discourse on education reform, teachers remain targets rather than the state or other government sectors. Without seeing the whole structure of public education, however, school education cannot be substantially developed.

In Japan, the Ministry of Education exercises nationwide influence over the authorization of textbooks and the course of study (*Gakushyu-Shido-Yoryo*). Within this system, textbooks are prescribed in municipal-wide areas: each school is not granted a choice in textbooks and teachers are given the content that they have to teach. Furthermore, the local level educational administration is carried out by the Board of Education which is divided into the prefectural level and the municipal level. The hiring of teachers comes under the authority of each Prefectural Board of Education and the school facilities, equipment, maintenance, and school budget come under the Municipal Board of

Education. Even principals do not have authority on these issues.

This article addresses the following question: "How should educational responsibilities be distributed among teachers and other stakeholders in public education?" This research will analyze the German paradigm as a mirror to the Japanese paradigm and consequently query school policy in this regard. For this purpose, the study conducted an analysis of school laws and regulations, surveyed related research, and conducted field research. The theoretical background of this research is informed by German educational science including researchers such as H. G. Rollf (school development), E. T. Terhart (teacher education), K. Nevermann (school administration), as well as H. Becker, H. Heckel, H. Avenarius, J. Rux, H. Wißmann,and T. Böhm, among others (German school law). Some related research by Yuki (2009) and Yanagisawa (1996) was also consulted. The author conducted the field research, including the visitation of schools, school supervisory offices, education ministries, and teacher education institutions from 2007 to 2014. The author targeted different states such as Niedersachsen, Hessen, and Nordrhein-Westfalen (former West Germany), Berlin (capital), Brandenburg (former East Germany), Bayern, and Baden-Württemberg (southern states).

## Germany's Educational Administration as a Mirror

In comparison with Japan where school curricula are authorized by one national Ministry (Ministry of Education, Culture, Sports, Science and Technology: MEXT), Germany is a federal republic nation made up of 16 federal states (*Länder*). Each German state has been entrusted with the authority to oversee education and cultural administration (*Kulturhoheit*: independence in matters of education and culture). However, it is written clearly in the constitution, which is called German Federation Fundamental Law (*Grundgesetz*) that "The entire school system shall be under the supervision of the state" (Article 7, Clause 1). This traditional principle is called "state supervision of school" The following is an overview of the German governance structure in school education.

Today, in the area of school education in Germany there is remarkably limited authority on the federal state. With the exception of the Federal Ministry for Education and Research (*Bundesministerium für Bildung und Forschung*), which deals with vocational education and scholarships, there is the Conference of Ministers of Education from all states (*Kultusministerkonferenz;* KMK). The authority for state supervision of school belongs to each federal state.

In addition to the diverse school policies and school systems within each state in Germany, there is a branched school system with several secondary school types after compulsory primary education. Therefore, the type of teachers or the needs of students/parents for each form of school varies. Because such school education schematics are highly diverse, this research recognizes that there are limitations to understanding Germany as a whole. However, from a Japanese outsider's viewpoint, there are still common aspects of school education that are nation-wide in Germany. For instance, state supervision of school or the branched school system is common among all states and the half-time schooling system is also a nationwide feature.

In 2001, Germany experienced a so-called PISA Shock. The relatively low results obtained by German students in the first PISA (Programme for International Student Assessment) by OECD (Organisation for Economic Co-operation and Development) made a nationwide blow. Following these

results, full-time schooling in Germany expanded despite criticisms of mainstream afternoon school education. The following comments by a principal of a comprehensive school (*Gesamtschule*) offers a symbolic opinion:

> ... After the Second World War, the reform toward half-time schooling was implemented and the separation from family education began because of reflection on the educational monopoly by schools. ... But, full-time schooling became necessary again. This was brought about because of the modern situation that the number of two-income households is increasing. ... In this school, full-time schooling was agreed to at a management level; however, a school must not become a dictator of education. (Interview with a school principal in Niedersachsen state, March 7, 2012. All quotes are translated into English by the author. All quotes herein are the same).

German school education has a limited range and reach so that it does not become a dictator of education. Furthermore, in order to prevent an education monopoly by school, legal concepts such as *school autonomy*, and *educational participation by teachers*, *parents, and students* are secured in the school laws in every federal state. German public education should be analysed in relation to the principles of state supervision of school, school autonomy, as well as educational participation by teachers, parents and students. This is because Germany no longer allows the state or school to have absolute authority over a certain subject. The balance inside the distributed governance structure needs to be questioned. Professional responsibility of a school teacher is one of the elements.

The relation between school and state is becoming more and more important. After the PISA shock, an inquiry was conducted at the Federation of States level with regards to quality assurance *(Qualitätssicherung)* and the way things ought to be. The institutionalization of education standards (*Bildungsstandards*) led to different kinds of achievement tests, external school evaluations (*Externe Schulevaluation*), and the monitoring system. It can be said that these reforms are more or less influenced by NPM (new public management), neo-liberalism, or new-controlling (*Neue Steuerung*). However, certain tensions between state and school still exist in the current discourse on German school education.

**Educational Participation by Teachers, Parents, and Students**

In spite of many reforms in the past decade, and in spite of the state supervision of school, German educational administration and school management have still kept at least two fundamental principles since the 1970s: school autonomy and educational participation by teachers, parents and students (Deutscher Bildungsrat, Bildungskommission, 1973). One direct example of this is that in Germany today, teachers, parents, and children are legally taking part in the *School Conference* (*Schulkonferenz*) as a decision making organization. All participants have the right to hear, suggest, and codetermine depending on the topics (Yanagisawa, 1996; Yuki, 1988).

For example, in the state of Niedersachsen there is the *Entire Conference* (*Gesamtkonferenz*), in which all teacher, parent, and student representatives participate. Figure 1 shows that since 2007 in addition to the Entire Conference, teacher, parent, and student representatives comprise the supreme legislative organization of and participate in the school board (Schulvorstand).

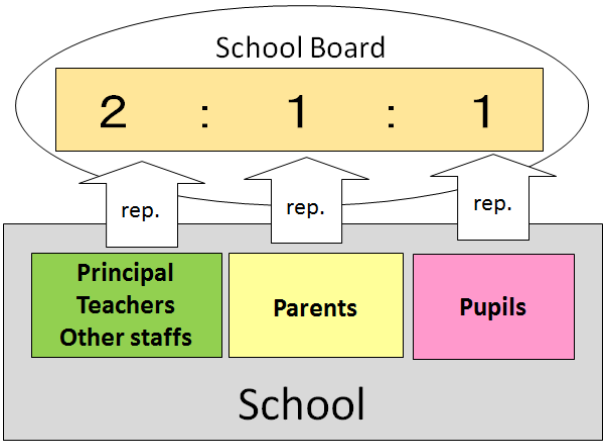


*Figure 1*. Structure of School Board. (Drawn by Tsujino in reference to articles 38a and 38b of the Niedersachsen School Law).

This type of educational participation system is captured within the Fundamental Law (understood in this article as parents' educational right): "The care and upbringing of children is the natural right of parents and a duty primarily incumbent upon them. The state shall watch over them in the performance of this duty" (Article 6, Clause 2). Further, "Every person shall have the right to free development of her/his personality insofar as she/he does not violate the rights of others or offend against the constitutional order or the moral law" (Article 2, Clause 1). This is understood as an individual development right.

Educational participation does not end at each school level. Figure 2 illustrates that there are different levels of participatory organization for both parent and student councils such as school level, district level, city level and state level. Under such a system, German school management is based on participation and codetermination. Historically, school management that is based on codetermination among all teachers including the principal is called collegial school management (*kollegiale Schulleitung*), which has been clearly distinguished from "dictatorial school management" or "authoritative school management" (Sturtz & Nevermann, 1985).

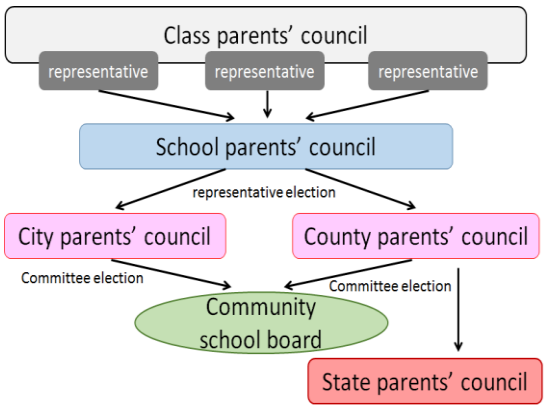


*Figure 2*. Structure of parents' council in Niedersachsen. Adapted from the official website of Kreiselternrat Wittmund [county parents' council Wittmund]. English translation by Tsujino.

## Placement of Pedagogical Freedom Within the Law

How are school teachers positioned under the German system, given the fundamental principles of state supervision of school, school autonomy, and educational participation? Professionals need a certain amount of autonomy; however, responsibility without authority is not allowed in modern democratic and legislative society. The legal position of the teacher, therefore, leads to the question, "How much professional responsibility should be borne by school teachers?"

In principle, school teachers in Germany hold a legal position as government officials (*Beamte*). Orginally, the government connection came about from the employment and allegiance relations under public law (*öffentlich-rechtliches Dienst- und Treuerverhältnis*) in which there was an imposed duty to obey orders from superiors (*Gehorsamspflicht*). However, *Beamte* have stable positions with lifetime employment, relatively high salaries, and social security. Terhart (2008) refers to a German feature of the teaching profession. In Europe and most of all in Germany, symbiosis of the so called 'free' profession and state are very similar … it is not inappropriate to refer to this context as a nationalized profession. This is a clear contrast to the 'free' profession in the USA (Terhart, p. 96).

Since the 1970s, following a series of decisions and judgements made by the federal constitutional court, the fundamental principles of constitutionalism and democracy have been applied to the school system. In spite of many reforms in school education since the 2000s including competencies based, standards oriented, output control, and new controlling policies, the fundamental principles of state supervision of schools, school autonomy, and educational participation remain. Under these principles, within each federal state school law each school teacher also enjoys pedagogical freedom (*pädagogische Freiheit*), and principals and school supervisors can do academic supervision (*Fachaufsicht*) of each teacher's educational activities. Further, pedagogical freedom legally guarantees that each teacher has discretionary power (*Gestaltungsraum/ Freiraum*) when it comes to lesson contents, teaching materials, teaching methods, and student assessment.

In spite of the diversity among the 16 federal states, pedagogical freedom today is "the recognized fact based on the school law in every state as a self-evident principle in judicial decisions" (Avenarius & Füssel, 2010, p. 663). For example, "pedagogical freedom must not be restricted unnecessarily or unfairly" (*Brandenburg School Law*, Article 67, Clause 2) and "pedagogical freedom which is required for teacher's instructional and educational work must not be constrained by the legal regulations, administrative regulations and conference decisions unnecessarily or unfairly" (*Mecklenburg-Vorpommern School Law*, Article 100, Clause 2).

Described below are some state restrictions related to academic supervision by the state as well as teaching activities within state law. The supervisory school authority can cancel or modify the pedagogical assessments and instructional decisions in the frame of academic supervision only if:

- they violate the laws or the administrative regulations;
- they are founded on an incorrect assumption or irrelevant consideration; or
- they are against generally accepted pedagogical principles or assessment standards (*Niedersachsen School Law*, Article 12, Clause 2).

The interviews conducted for this study so far reveal that the general idea of pedagogical freedom in Germany is not

limited to legal wording. Rather, pedagogical freedom is common knowledge in both schools and in educational administrations. In one interview with a section manager from a county school department in the state of Baden-Württemberg said, "Even in a case where education method 'A' didn't go well and the principal directs the teaching staff to method 'B' [the method] cannot be changed. Education methods are decided by the teaching staff" (November 14, 2005).

The reach and border of pedagogical freedom is dealt with by the administrative in-service education. As Arend (2002) explained from his position in the state of Saarland's Ministry of Education, there is a range and limit of pedagogical freedom. The following response on a 2007 questionnaire is from a primary school teacher from the state of Hessen with 31 years of teaching experience: "Pedagogical freedom has to be exercised with respect to plurality of opinions in a faculty. The same as any freedom, pedagogical freedom can be abused. It is important, in this context, to emphasize the responsibility to pupils and parents."

On the other hand, the next comment by a representative of a state parents' council in Niedersachsen presents a frank opinion to pedagogical freedom. "... the problem so far with pedagogical freedom and pedagogical responsibility is there was not anyone to review this. I want this to be checked."

The next comments are by the three representatives of a school students' council conducted in Berlin on October 14, 2014: (A) "[Parents have] very big expectations;" (B) "Parents don't see [the school], therefore it is hard to picture what is happening. They want to have information;" and (C) "Parents tend to control teachers, but this doesn't work well in the end." Person A also stated, "The ways of communication by parents and teachers are different."

Although the opinions mentioned above are only a few examples, there can be certain power balances among principals, teachers, parents, and students. Even if there is no opportunity for parents and students to participate in school education, they are positioned as only service takers. Pedagogical freedom should not give teachers absolute authority in theory and in practice.

As an additional remark, pedagogical freedom is distinct from academic freedom (*akademische Freiheit*) in German Fundamental Law: "Arts and sciences, research and teaching shall be free. The freedom of teaching shall not release any person from allegiance to the constitution" (Article 5, Clause 3). This fundamental right for research and teaching freedom is acknowledged for university professors. Having pedagogical freedom for teachers is not considered as a basis for academic freedom (Avenarius & Füssel, 2010; Böhm, 2001).

## Governance Structure in Public Education

Since the 1970s, the German school system has democratized toward a distributed structure that includes school autonomy and educational participation. Prior to the 1970s, and up until the 1960s, the situation was far different from democracy. Becker (1954) clearly criticized the situation at the time:

> Our school is an "administrated school"; while the modern school whose mental foundation has arisen from the enlightenment was a life-nexus of self-standing human being which is only monitored by state at one time, it has developed as the lowest administrative hierarchy more and more. Today, it stands on the similar stage of administrative structure such as the tax office, employment office or local police, and it makes clear contrast to the self-administration by municipal community. (p.130)

There was grave reflection on and severe criticism of Nazism during WWII. The lesson was what Arendt (1961) described afterwards as the "Banality of Evil." Among intellectuals at the time, represented by the Frankfurt School, there was a sense of impending crisis to totalitarianism remaining in society even until the end of the war. To resist such a situation and to establish a democratic legislative welfare-state, what was strongly needed was education that keeps human-beings thinking, self-standing, critical, and creative. Heckel (1957), a famous jurist of education, addressed pedagogical freedom as follows:

> Teachers can educate toward freedom, only if he himself is free. Therefore, school legislation should legally assure pedagogical freedom corresponding of the essence and significance of education. And the school administration should restrain itself from regulating individual issues of instruction and education as much as possible. (p.168)

From the time that this discussion unfolded already half a century has elapsed. Nevertheless, today's governance structure in public education is still rooted in such thoughts; although, the historical process of structural development has not been simple but has rather been meandering. This origin of democracy and professional autonomy in the German school system today, as mentioned above, is worth noting.

A current advocate of pedagogical freedom, Rux (2002) claims that if the fundamental law is placed at education's core and if the state, parent, and child are placed triangularly around this core, then teachers can better accomplish their responsibilities, of which pedagogical freedom is indispensable. This triangular structure of fundamental law is illustrated in Figure 3. Another advocate, Wißmann (2002, 2003), also claims the importance of pedagogical freedom and denies absolute power belonging to any subject such as the state, parent, or child in education. Finally, school teachers as teaching professionals can be positioned to adjust different rights or authority and to keep balance among them. Figure 3 further demonstrates that pedagogical freedom is needed not for teachers themselves, but to uphold their professional responsibility for the development and welfare of children. In other words, this "freedom" is not for teachers themselves, but is a devoted freedom to students by the education profession. After Rux and Wißmann, however, this theme seems to have not been argued for more than ten years.

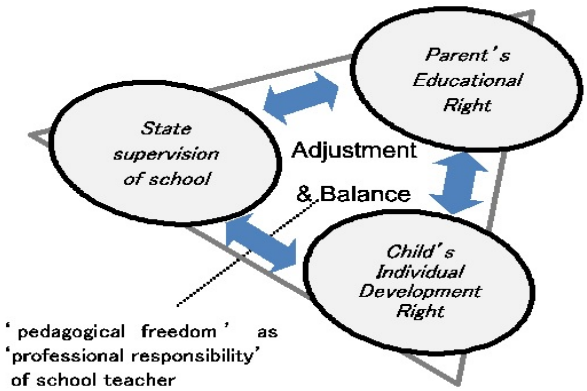


*Figure 3.* Author's creation describing the fundamental law triangular structure.

## Implication for Japanese Situation

In conclusion, what kind of implications does the German example have for the Japanese paradigm? First, in both Germany and Japan, school teachers are government officials. This means that teachers are legally positioned inside the public education system with a bureaucratic structure. In Germany, pedagogical freedom is legally secured in opposition to an administrated school by the state. In Japan, however, there is no such legal security for teachers. This means that professional responsibility can hardly be fulfilled in a restaurant paradigm with a huge franchise management structure. Given that Japanese teachers have to teach according to the given content and condition, the quality of their output politically results in positioning teachers as cooks.

Second, educational participation in German school management and administration is also legally secured. Educational participation and school autonomy are understood as the wheels supporting the functioning of schools. Only autonomy can bring about bureaucracy inside schools, and only participation can cause mobocracy. In Japan, where no wheel is legally secured, an administrated school can still be alive. The professional responsibility of school teachers can be defined only in the relation with others such as their students, parents, colleagues, and principals. Autonomy and participation are also needed for education toward democracy.

Third, professional responsibility of school teachers also exists with other educational responsibilities such as state, local governments, communities, and so on. In Japan where provincial policy does not hold much authority, one central government (MEXT) makes centrally driven nationwide reforms as a part of a quality assurance policy. Within this, the professional development of school teachers is emphasized. However, in the Japanese public education system as a whole, the other structure of educational responsibility needs at least the following:

- the municipal board of education to arrange appropriate facilities and equipment in each school;
- the prefectural board of education to fulfil appropriate personnel affairs for each school; and
- the state to develop appropriate quality standards not only for teachers but also for administrations themselves.

When we think about the professional responsibility of the school teacher, we also need to recognize that teachers' jobs are set between professionalism, bureaucracy, and pupils. On the one hand, the identity of a teacher is understood as the dilemma between professionalism and bureaucracy. On the other hand, teachers also have a dilemma between authority and participation. This trilemma of teachers in public education is illustrated in Figure 4. In this structure, other actors' responsibilities are also needed to clarify the public education system as a whole.

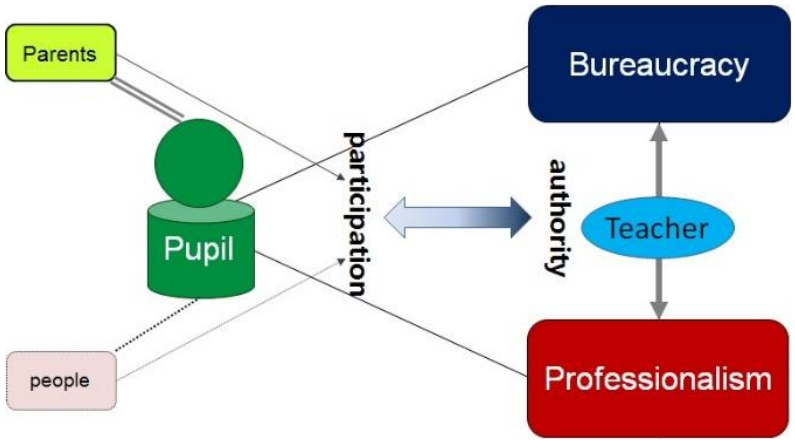


*Figure 4*. Trilemma of teachers in public education. (Author's creation with reference to Tsujino, 2012, p. 244).

Today's public education needs to change toward a system rooted in globalization and localization rather than nationalization. Under a de-nationalized public education system, pupils can actually think and act on their own feet in order to live. This document analysis attempted to clarify the structure of the professional responsibility of school teachers as part of the whole structure of the public education system. To clarify, in order to develop public education in this unstable and invisible present/future society, what is also needed is the educational responsibilities of other actors.

## References

(All titles are translated into English by Kemma Tsujino)

Arend, P. (2002). Pädagogische Freiheit: Umgang und Grenzen (Pedagogical Freedom: Reach and Border). Retrieved from http://www.lpm.unisb.de/SL/Archiv/SLF2002/Arend.pdf

Avenarius, H. & Füssel, H.P. (Ed.). (2010). *Schulrecht* (8th ed.). Link Verlag Kronach.

Avenarius, H. & Heckel, H. (2000). *Schulrechtskunde* (7th ed.). Neuwied/Kriftel, Germany.

Becker, H. (1954/1993). "Die verwaltete Schule" [The administrated school]. *Recht der Jugend und Bildungswesens*, *2*, 130-147.

Böhm, T. (2001). *Schulrechtliche Fallbeispiele für Lehrer.* Luchterhand, Germany.

Deutscher Bildungsrat, Bildungskommission. (1973). *Zur Reform von Organisation und Verwaltung im Bildungswesen, Teil 1, Verstärke Selbständigkeit der Schule und Partizipation der Lehrer, Schüler und Eltern*, Bonn, Germany.

Fend, F. (2008). *Schule gestalten: Systemsteuerung, Schulentwicklung und Unterrichtsqualität*, VS Verlag für Sozialwissenschaften.

Haasch, G. (Ed.). (2000). *Bildung und Erziehung in Japan* [*Education in Japan*], Edition Colloquium.

Heckel, H., & Seipp, P. (1957). *Schulrechtskunde*. Neuwied, Germany.

Heckel, H. (1957). Pädagogische Freiheit und Gehorsamspflicht. *Zeitschrift für Beamtenrecht,* 5. Jahrgang, Heft 8, 217–221.

Knudsen, H. & Böhm, T. (Eds.). (2000). *SPE*, Luchterhand, Germany.

Kreiselternrat Wittmund. Schulelternrat, Retrieved from http://ker-wtm.de/eltern-organisation/schulelternrat/

Niehues, N. & Rux, J. (2006). *Schul- und Prüfungsrecht* (4th ed.). München, Germany.

Rux, J. (2002). *Die pädagogische Freiheit des Lehrers* [*Pedagogical Freedom of Teacher*], Berlin, Germany.

Sakakibara, Y. & Tsujino, K. (2014). Doitsu niokeru Kyoin Kensyu no Seido to Unyo: Bayern ni miru Jinteki-Kaihatsu kara no Shisa [System and its operation of teacher in-service education in Germany: Hints from human development in the case of the state of Bavaria]. *Bulletin of Kyoto University of Education*, *124*, 1–12.

Schaub, H. & Zenke, K.G. (2000). *Wörterbuch Pädagogik* (4th ed.). München, Germany.

Sturtz, S. & Nevermann, K. (1985). Schulleitung – historisch gesehen. *Schulleiter- Handbuch*, *34*, 1–100.

Terhart, E. (2008). Erstes Staatsexamen oder Master of Education: welcher Abschluss für angehende Lehrer? [First National Exam or Master of Education: Which Completion for Future Teacher?]. *Recht der Jugend und des Bildungswesens, 56*(1), 94–105.

Terhart, E.(2011). Lehrerberuf und Professionalität: Gewandeltes Begriffsverständnis – neue Herausforderungen [Teacher and Professionality: Changed Concept Understanding – New Challenge]. *Zeitschrift für Pädagogik, 57*, (Beiheft) 202–224.

Terhart, E. (2013). Erziehungswissenschaft und Lehrerbildung [Educational Sciences and Teacher Education]. Münster, Germany: Waxmann.

Tsujino, K. (2012). Kyoshi no Rikiryo-kaihatsu [Professional Development of Teacher]. In K. Shinohara (Ed.), *Gakko-kaizen Management* [*School Improvement Management*] (pp. 233–251). Kyoto, Japan: Minerva Shobo.

Wißmann, H. (2002). *Pädagogische Freiheit als Rechtsbegriff* [*Pedagogical Freedom as Legal Concept*]. Baden-Baden, Germany.

Wißmann, H. (2003). Funktionsfreiheiten in der öffentlichen Verwaltung –Prozessualer Schutz von Verwaltungskompetenzen, *9*, 293–305.

Yanagisawa, Y. (1996). *Doitsu Gakko Keiei no Kenkyu: Gougisei Gakko Keiei to Kohchosyoku no Yakuwari Hennyoh* [*Study on German School Management: Collegial School Management and Change Role of Principal*]. Akisyoboh.

Yuki, M. (1988). *Kyoiku-hosei no Riron – Nihon to Nishidoitsu* [*Education Law and Legislation – Japan and West Germany*]. Tokyo, Japan: Kyoiku-katei Shinbunsha.

Yuki, M. (2009). *Kyoiku no Jichi Bunnken to Gakko Hohsei* [*Autonomy-Decentralization of Power in Education and School Legislation*]. Tokyo, Japan: Tohshindo.

## Author

**Kemma Tsujino** is an associate professor at the Joetsu University of Education in Japan and teaches educational administration. Over the last decade he has researched teacher education and educational administration/management in Germany in comparison with Japan. His interests are internationalization of school education and teacher education.

# ASSESSING THE SENIOR SCHOOL STUDENTS' KNOWLEDGE, ATTITUDE AND PRACTICES RELATED TO CLIMATE CHANGE: IMPLICATIONS FOR CURRICULUM REVIEW AND TEACHER PREPARATION

Folajogun V. Falaye & Eugenia A. Okwilagwe
Institute of Education, University of Ibadan, Ibadan, Nigeria.

**Abstract:** *Changes in weather patterns result in devastating natural disasters that affect human beings and the environment. Ironically, climate change is man induced. This study investigated the knowledge, attitude, and practices of 1,103 senior school students on climate change and related issues. The study also determined the influence of students' age, gender, religion, subject affiliation, and parents' education levels on students' knowledge, attitudes, and practices. A questionnaire was employed to collect data; descriptive and inferential statistics were used for data analyses. Findings indicated that knowledge of climatic change issues is slightly low among students, while their attitude is slightly favorable. They engage in practices that do not entirely predispose the environment to devastating effects, especially flooding. Apart from gender, all other independent variables significantly differentiate students' knowledge, while seemingly mothers' educational level influences student practices. Therefore, teachers need to be sensitized on the level of students' knowledge, attitudes, and practices that are related to climate change and be adequately prepared to update students' knowledge of climatic issues.*

**Key words:** Climate change, KAP, parents' educational level, flooding

## Introduction

Evidence shows that climate change is experienced all over the globe. Climate change is defined as a change in the state of the climate that can be identified and measured by changes in the mean and/or variability of its properties (Intergovernmental Panel on Climate Change, [IPCC], 2007). Climate change can persist over a long time, usually over decades and much longer and leads to extremes of weather conditions such as temperature, wind, rainfall, and humidity (Ayoade, 2003). The consequences of climate change impact the environment, health, agriculture, and transportation. Heat waves and wildfires have made life unbearable for both the human population and wildlife. This situation is particularly precarious in the hot regions of the world.

In Nigeria for instance, climate change is already exerting negative effects on the landscape. Nigerians are experiencing dry spells, high temperatures, off season rains, drought, and flooding. Lake Chad in northeast Nigeria is shrinking. Since 1960, Lake Chad has shrunk by 95% of its size (Awake, 2009). The Sahara desert in the northern part of Nigeria is expanding to all directions at an annual rate of 1-10km (Odjugo & Ikhuoria Isi, 2003; Yaqub, 2007). Subsistence farming, which provides staple foods for the people, is being threatened. Perhaps one of the biggest threats of climate change is hydroelectric power generation. Nigerians experience seasonal reduction in the amount of electricity generated annually due to drought conditions which are getting worse. This reduction has implications on industrial development in Nigeria. Southern Nigeria, however, is experiencing increasing rainfall and getting wetter leading to flooding. Major cities such as Lagos, Ibadan, Benin, Warri, Port-Harcourt, Calabar, and those along major water ways like Lokoja have experienced flooding after heavy rains causing loss of human lives, livestock, and property.

Incidences of flooding are not only limited to the south; the northern part of Nigeria has also been hit by floods in states such as Sokoto, Niger, Jigawa, Yobe, Borno, Taraba, and Kebbi. Apart from the serious impact of floods on agriculture and displacement of inhabitants and destruction to property, floods also threaten the health of the populace by exposing them to cholera, diarrhea, malaria, and other water-borne diseases (Bagir, Sobani, Bhamani, & Bhani, 2012; Oyakale, 2013; Watson, Gayer, & Connolly, 2007). This impact is so because according to UNESCO, developing countries (of which Nigeria is one) are disproportionately affected by natural disasters because they lack resources, infrastructures, and disaster-preparedness systems (Watson et al., 2007).

Climate change is known to be caused by two basic factors: (a) bio-geographic factors, which include natural forces, and (b) anthropogenic factors, which are made up of human activities. Human activities which cause climate change either emit large amount of greenhouse gases into the atmosphere through bush burning, gas flaring, and industrialization, thereby depleting the ozone layer, or through human activities that reduce the amount of carbons absorbed from the atmosphere (Odjugo, 2001). Prominent among human activities that reduce the amount of carbon absorbed from the atmosphere are deforestation, agricultural practices, and other unhealthy changes in land use.

Research and scientific evidence continue to grow pointing to the increasing changes in the climate and the attendant devastating effects (Apata, 2012; Odjugo, 2001; Olaniyi, Ojekunle & Amujo, 2013; Yaqub, 2007; Young, 2006). Furthermore, scientists are unequivocal that the primary cause of global warming is human activities (Odjugo & Ikhuoria Isi, 2003; Yaqub, 2007). Also, researchers have reported that level of awareness as well as some socio-demographic variables influences attitudes and practices (Akpan & Falaye, 2009; Falaye, 2006, 2009; Okobia, Bunker, Okonofua, & Osime, 2006). Previous studies indicated that young school students are strongly in support of actions designed to prevent the impact of human induced global warming. Young women are more concerned about their environment than the males. Social background was also found to be important in determining environmental attitudes (Tranter & Skrbis, 2011). Students in tertiary institutions showed interest in issues relating to climate change and are willing to participate in measures that will help mitigate climate change (Bruindres et al., 2007). The teachers who teach these students need to be highly informed too as previous studies indicated; although in some categories, teachers are not aware of climate change (Ekpoh & Ekpoh, 2011; Hegde, Murthy, Shalini, & Sandeep, 2012; Ochieng & Koske, 2013).

The secondary school geography curriculum along with other subjects such as physics, basic science, agricultural science, and social studies have contents that address climate change covered under topics like climate change, global warming, or environmental hazards. However, the scope and depth of coverage vary from subject to subject. Dealing with issues relating to students' knowledge that is the cognitive domain is the primary focus of these subjects and the teachers, but in particular attitudes and practices are neither included nor are they properly dealt with in the curriculum (geography curriculum implementation inclusive). There is also the dearth of relevant reading materials that cover these aspects. This is attested to by Ekpoh and Ekpoh (2011) in their survey of teachers' awareness of issues on climate change in the city of Calabar, Nigeria.

Therefore, this study assessed the knowledge of, attitudes towards, and practices of students in regard to climate change. Findings from this study will reveal the level of awareness of the students about

climate change and its impact, and act as a guide to be used to bridge the gap in students' knowledge in order to improve their attitudes and modify their behaviours appropriately.

## Purpose

The purpose of this study was to find out what senior secondary students understand about climate change, their attitudes toward issues of climate change, and their practices, it will form a good standing point to build strategies aimed at mitigating the impact of climate change on the people and the environment. The research questions were as follows:

1. What is the level of the knowledge, attitudes, and practices of senior school students in regards to climate change?
2. Are there statistically significant differences in students' knowledge, attitudes, and practices based on their gender, age, religion, subject affiliation, and parents' level of education?
3. Is there any significant difference in the knowledge, attitudes, and practices of students who offer geography and those who did not?

## Method

In this study which adopted survey research through the use of a structured questionnaire, students' knowledge of climate change was measured in terms of their understanding of issues on global warming and its impact on the environment and living things while their attitudes measured students' predisposition towards different strategies that could be used to ameliorate the negative impact of climate change. Students' practices captured the practical application of the knowledge of climate change (in terms of their daily reactions/responses) to issues or activities that they perform, come in contact and/or making informed positive choices and taking decisions.

### Participants

The research participants were 1,103 senior secondary school (SSII) students from Ibadan Metropolis. Ibadan is the capital of Oyo State, Nigeria.

### Instrument

One questionnaire was designed for data collection (contact author for copy). The questionnaire consisted of four sections. Section A included the socio-demographic information about the students. Sections B, C, and D had items on knowledge, attitudes, and practices related to climate change respectively. The section B had 10 multiple choice questions and 10 true/false items totaling 20 knowledge items. In section C, there were 10 attitudinal items rated on a 4-point Likert scale of strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). While section D consisted of 20 multiple items measuring student practices. The instrument was content validated to ensure that items measured what they were intended to measure. To pilot the instrument, it was administered to 100 SS II students from two schools in the Ibadan Metropolis who were not involved in the study. The obtained Cronbach's alpha 0.87 signified that the instrument was valid and reliable.

### Data Collection and Analysis

The data for the research were collected using the validated questionnaire with the help of research assistants. The participants gave their consent before participating in the study. For the knowledge subscale, each correct answer attracted 1 mark, and incorrect answer was scored 0. Each attitude statement was rated on a 4-point Likert scale with positive items marked as SA = 4, A = 3, D = 2, and SD = 1, and negative items scored in a reverse order (SA = 1, A = 2, D = 3, & SD = 4). Similarly, for the items measuring students' practices, each item measuring favorable

environmental practice was scored 1 and 0 for the unfavorable practice. The data were analyzed using descriptive statistics: frequency counts, means, median, modes, standard deviation, and inferential statistics: *t*-test and analysis of variance (ANOVA). Scheffé post-hoc was used to detect significant differences among groups.

## Results

### Effects of Participants' Demographics

About 70% (n= 765) of the participants were aged between 15 and 17 years, while those aged below 15 years and above 17 years are about 13% (n= 139) and 18% (n=199) respectively. Slightly over half 54.94%, (n=606) were males, and 45.06% (n=497) were females. Less than three-fifths, 55.58% (n= 613) were Christians, over two-fifths, 43.24% (n= 477) were Muslims, while only 1.18% (n=13) practiced the traditional religion. About two-fifths, 41.89% (n=462) studied science subjects, followed by arts (29.19%; n=322), while the remaining 28.92% (n=319) studied commercial subjects. The majority of their parents had a senior school certificate as the highest educational qualification held (father – 31.91% and mother – 33.82%). Some parents had a doctorate degree (father – 5.89%; mother – 3.45%), while others had no education at all (father – 6.89 %; mother – 8.98 %). On the whole, participants' fathers had higher educational qualifications than their mothers.

Table 1
*Descriptive Statistics of Students' Scores on Knowledge, Attitudes, and Practices*

| Variables | Mean | Median | Mode | Std. Deviation | Min | Max |
|---|---|---|---|---|---|---|
| Knowledge | 9.15 | 9.00 | 9.00 | 2.62 | 1 | 17 |
| Attitudes | 24.95 | 25.00 | 25.00 | 3.80 | 13 | 38 |
| Practices | 29.30 | 30.00 | 32.00 | 4.02 | 18 | 38 |

Table 1 shows the descriptive statistics of students' scores on the knowledge, attitudes, and practices. The minimum score on knowledge of climate change was 1 and the maximum score was 17. According to the scores (M = 9.15; SD = 2.62), the knowledge of climate change is slightly low among the students. Students' attitudes to climate change, with mean score of 24.95 and standard deviation of 3.80, was favorable. In terms of practices, with a maximum of 38 scores and a minimum of 18, a mean score of 29.30 and standard deviation of 4.02, the students engaged in practices that do not seriously predispose the environment to hazards of climate change.

Table 2
T-*test of Students' Knowledge, Attitudes, and Practices by Gender*

| | Gender | N | Mean | Std. Deviation | Df | *t* | Sig |
|---|---|---|---|---|---|---|---|
| Knowledge | Male | 606 | 9.07 | 2.649 | 1100 | -1.103 | .784 NS |
| | Female | 497 | 9.25 | 2.584 | | | |
| Attitudes | Male | 606 | 24.80 | 3.679 | 1100 | -1.458 | .145 NS |
| | Female | 497 | 25.14 | 3.929 | | | |
| Practices | Male | 606 | 29.54 | 4.067 | 1100 | 2.181 | .029* |
| | Female | 497 | 29.01 | 3.935 | | | |

* = significant at P< 0.05; NS = not significant at P< 0.05.

Table 2 shows no significant differences in students' knowledge of and attitudes toward climate change on the basis of their gender; whereas, there was a significant difference in their practices ($t$ = 2.181; p < .05). Post hoc analysis revealed that male students obtained higher mean scores in items that measured practices (M = 29.54; SD= 4.07) than the female students (M = 29.01; SD= 3.94).

Secondary students at junior and senior schools participated in the study, and by virtue of their age differences, they were categorized into three groupings (i.e., younger than 15 years, 15-17 years, older than 17 years). As shown in Table 3, there was a significant difference in students' knowledge of climate change among the different age groups ($F_{(2, 1100)} = 4.58$; p< 0.05); whereas, there were no significant differences in the attitudes and practices of students in different age groups. Scheffé post hoc test shows that students above 17 years of age scored significantly higher in knowledge than those between 15 and 17 years and those below 15 years.

The table shows a significant difference in knowledge of students on climate change on the basis of their religion ($F_{(2, 1100)} = 11.82$; p< 0.05). However, no significant differences in their attitudes and practices were found. Scheffé test indicates that students who are Christians obtained significantly higher scores in knowledge than those who practice traditional or Islamic religions.

Table 3
*ANOVA of Knowledge, Attitudes, and Practices and Students' Demographics*

| Source | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| **Age** | | | | | | |
| Knowledge | Between Groups | 62.417 | 2 | 31.209 | 4.576 | .010* |
| | Within Groups | 7501.900 | 1100 | 6.820 | | |
| | **Total** | **7564.317** | **1102** | | | |
| Attitudes | Between Groups | 5.750 | 2 | 2.875 | 0.199 | .819NS |
| | Within Groups | 15872.892 | 1100 | 14.430 | | |
| | **Total** | **15878.642** | **1102** | | | |
| Practice | Between Groups | 2.390 | 2 | 1.195 | 0.074 | .929 NS |
| | Within Groups | 17760.865 | 1100 | 16.146 | | |
| | **Total** | **17763.255** | **1102** | | | |
| **Religion** | | | | | | |
| Knowledge | Between Groups | 159.125 | 2 | 79.562 | 11.819 | .000* |
| | Within Groups | 7405.193 | 1100 | 6.732 | | |
| | **Total** | **7564.317** | **1102** | | | |
| Attitudes | Between Groups | 33.787 | 2 | 16.893 | 1.173 | .310 NS |
| | Within Groups | 15844.855 | 1100 | 14.404 | | |
| | **Total** | **15878.642** | **1102** | | | |
| Practice | Between Groups | 10.696 | 2 | 5.348 | .331 | .718 NS |
| **Subject Affiliation** | | | | | | |
| Knowledge | Between Groups | 410.665 | 2 | 205.333 | 31.574 | .000* |
| | Within Groups | 7153.652 | 1100 | 6.503 | | |
| | **Total** | **7564.317** | **1102** | | | |
| Attitudes | Between Groups | 21.481 | 2 | 10.741 | .745 | .475 NS |
| | Within Groups | 15857.161 | 1100 | 14.416 | | |
| | **Total** | **15878.642** | **1102** | | | |
| Practice | Between Groups | 25.163 | 2 | 12.581 | .780 | .459 NS |
| | Within Groups | 17738.092 | 1100 | 16.126 | | |
| | **Total** | **17763.255** | **1102** | | | |

| Father's Level of Education | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Knowledge | Between Groups | 262.841 | 6 | 43.807 | 6.576 | .000* |
| | Within Groups | 7301.476 | 1096 | 6.662 | | |
| | **Total** | **7564.317** | **1102** | | | |
| Attitudes | Between Groups | 163.674 | 6 | 27.279 | 1.903 | .077 NS |
| | Within Groups | 15714.968 | 1096 | 14.338 | | |
| | **Total** | **15878.642** | **1102** | | | |
| Practice | Between Groups | 277.122 | 6 | 46.187 | 2.895 | .008 * |
| | Within Groups | 17486.133 | 1096 | 15.955 | | |
| | **Total** | **17763.255** | **1102** | | | |
| **Mother's Level of Education** | | | | | | |
| Knowledge | Between Groups | 316.624 | 6 | 52.771 | 7.980 | .000* |
| | Within Groups | 7247.693 | 1096 | 6.613 | | |
| | **Total** | **7564.317** | **1102** | | | |
| Attitudes | Between Groups | 233.421 | 6 | 38.904 | 2.725 | .012 NS |
| | Within Groups | 15645.221 | 1096 | 14.275 | | |
| | **Total** | **15878.642** | **1102** | | | |
| Practice | Between Groups | 522.398 | 6 | 87.066 | 5.535 | .000* |
| | Within Groups | 17240.857 | 1096 | 15.731 | | |
| | **Total** | **17763.255** | **1102** | | | |

* = significant at P< 0.05; NS = not significant at P< 0.05

Subject affiliation significantly differentiated student knowledge of climate change ($F_{(2, 1100)} = 1.57$; $p < 0.05$) as shown in Table 3. However, there were no significant differences in their attitudes and practices with respect to their subject affiliation. This finding is similar to the trend observed with respect to students' attitudes and practices and their religion. Post hoc test reports that arts and commercial students have significantly lower scores in knowledge of climate change than their science counterparts.

Apart from attitudes, student knowledge ($F_{(6, 1096)} = 6.58$; $p < 0.05$) and practices ($F_{(6, 1096)} = 2.90$; $p < 0.05$) were significantly differentiated by their father's qualification (see Table 3). While students whose fathers have first degrees obtained significantly higher scores in knowledge of climate change than other groups of students, those whose fathers had no formal education reported significant better practices than other students.

Also, Table 3 indicates that student knowledge ($F_{(6, 1096)} = 7.98$; $p < 0.05$), attitudes ($F_{(6, 1096)} = 2.73$; $p < 0.05$), and practices ($F_{(6, 1096)} = 5.54$; $p < 0.05$) were significantly differentiated by their mother's educational qualifications. Post hoc analysis shows that students whose mothers obtained first degree performed significantly better in knowledge and practices than other students.

## Performances of Geography and Non-Geography Students

Specifically, the researchers were interested in finding out if significant differences existed in the scores on knowledge, attitudes, and practices of students who enrolled in geography and those who did not. As indicated in Table 4, findings reveal significant differences in knowledge ($t = 4.23$; $p < 0.05$) and practices ($t = -2.13$; $p < 0.05$) but no significant difference in their attitudes toward climate change. It also shows that geography students performed better ($M = 9.47$; $SD = 2.72$) than the non-geography students ($M = 8.81$; $SD = 2.47$).

Table 4
*Statistics Comparing Geography and Non-Geography Students*

| | Students | N | Mean | Std. D | *t* | Df | P-value |
|---|---|---|---|---|---|---|---|
| Knowledge | Geography | 565 | 9.47 | 2.717 | 4.237 | 1101 | 0.000* |
| | Non Geography | 538 | 8.81 | 2.472 | | | |
| Attitude | Geography | 565 | 24.96 | 4.092 | 0.018 | 1101 | 0.986 NS |
| | Non Geography | 538 | 24.95 | 3.461 | | | |
| Practice | Geography | 565 | 29.05 | 4.033 | -2.128 | 1101 | 0.034* |
| | Non Geography | 538 | 29.57 | 3.982 | | | |

* = significant at P< 0.05; NS = not significant at P< 0.05.

## Discussion

The results of this study indicate that knowledge of issues related to climate change is low among students, while their attitudes are slightly favorable. This finding is similar to Okobia et al.'s (2006) study that reported poor knowledge but positive attitude of Nigerian women towards breast cancer. A significant difference in students' knowledge of climate change among the different age groups is reported in this study, indicating that knowledge of climate change increases with students' ages. This finding is in line with that of Falaye (2009). On the other hand, no significant differences in attitudes and practices were found. Therefore, it means that students' knowledge of climate change has not influenced their attitudes and practices. This manner of findings is not surprising as the curriculum and teachers do not emphasize the teaching of these behaviours and concepts. It is, therefore, not easy for students to translate what is learnt to other related situations.

Gender did not differentiate students' knowledge and attitude towards climate change, but it did with respect to their practices. Usually knowledge and attitude influence behaviour, but in this case they did not. Significant differences in students' practices must have been due to other variables. Religion and subject affiliation significantly differentiated students' knowledge of climate change but not in their attitudes and practices. Christians obtained significantly higher scores in knowledge than those who practice traditional religion or Islam. Also, students who enroll in arts and commercial subjects have significantly lower scores in knowledge of climate change than the science students. Issues related to climate change are scientific in nature; therefore, the higher mean score of science students in knowledge of climate change is understandable. In addition, students from homes where fathers have little or no education reported significantly better practices than those from educationally advanced homes. This finding could be traced to practices that are influenced by the family socio-economic status. Students from affluent homes tend to pay little attention to issues of environment because their parents can afford to employ extra hands to assist at home. However, students from low socio-economic background have the tendency to pay more attention to environmental issues because they themselves engage in many activities at home and beyond with a view to maximize the available little family resources.

In the same vein, students who enrolled in geography obtained significantly higher scores in knowledge and practices than those who did not enroll in geography. Climate change is one of the major concepts of secondary school geography. Exposure of students to climatic geography gives them an advantage over non-geography students. Furthermore, geography is regarded as more of a science

subject than arts. Unfortunately, knowledge of climate issues did not translate to positive attitudes and favorable practices in this case. It is speculated that this result is from a lack of curriculum planning for imparting such behaviour as earlier indicated. It further confirms the generally held view that attitudes and behaviors are not easily changed. Similar to Anable, Lane, and Kelay's (2006) view, this study tends to confirm their finding that there is no consistency between attitudes and behaviours as people generally expect. Anable et al. maintain that there are motivators of human behaviour and extremely complex barriers to behavioural change.

Similar to the findings of Akpan and Falaye (2009), parental level of education significantly differentiated students' knowledge and practices in this study. Further still, while their mother's level of education differentiated students' attitudes to climate change, their father's level of education did not. Students whose parents obtained first degrees significantly scored higher in knowledge of climate change than other groups of students. While, students whose fathers had no formal education reported significantly better practices than other students, students whose mothers obtained first degree significantly engaged in better environmentally friendly practices than other groups of students. In certain cultures mothers predominantly take care of the environment, and while doing the chores, they socialize their children to do the same.

The Nigerian government needs to take a cue from other countries like Japan, Canada, and Australia among others by creating better awareness of climate change and how students and the populace can respond to climate changes and management of disasters. Such responses can mitigate the negative impacts of such changes on the population. For example, international responses to climate change include institution of solar schools in Australia, eco-schools in Japan, making provincial policies in Canada, and disaster reduction risk management mainstreamed into the curriculum in Asia and Madagascar (UNESCO Bangkok, 2012). Introducing climate change concepts into the school curriculum with a view to improving ecological literacy about global warming issues facing humankind is needed globally (Ontario Ecological Literacy Resource, 2011-12). This way students and the general populace will be equipped with knowledge and skills to respond positively to the challenges and opportunities that changing climate brings our way.

The findings in this study spell implications for curriculum review, teacher preparation, and government proactive action. First, school geography curriculum should be updated to incorporate issues on attitude change and practices. This addition will ensure that the affective and psychomotor domains of learning are achieved. In order to improve ecological literacy about global warming issues facing humankind (Ontario Ecological Literacy Resource, 2011-12), the curriculum of other school subjects should be reviewed to include issues of climate change, attitudes, and practices of good behaviour towards the environment irrespective of subject affiliation. All students should be exposed to issues of climate change with a view to increasing awareness and positive practices because issues of climate change affect everybody in the society. The stark realities of the impact of climate change and the current global awareness being created by the world leaders makes it imperative to galvanize all efforts to protect the earth and make it conducive to live in. Second, with the inclusion of relevant topics/contents/concepts in the school curriculum, training and re-training programmes for teachers should be embarked upon to bring them up-to-date with the what, how, and why of these issues.

## Conclusion

Climate change is not only caused by natural forces, human activities are known to fuel impact of climatic change. This study assessed students' knowledge, attitudes, and practices related to climate change, even though attitudes and practices were not entirely poor, their knowledge of climate change was below average. With the reported devastating impact of climate change on the environment, agriculture, water resources, and even health, peoples' awareness of climate change must be improved. Students are better used as change agents if their knowledge base is enhanced. It is on this note that topics on climate change should be integrated into the secondary school curriculum, while teachers should be prepared through training to handle this new content.

## References

Akpan, E. P., & Falaye, F. V. (2009). Parental educational background and supportiveness in students' preference for technical and vocational education. *Nigerian Journal of Applied Psychology, 10*(2), 109–122.

Apata, T. G. (2012). Effects of global climate change on Nigerian agriculture: An empirical analysis. *CBN Journal of Applied Statistics, 2*(131), 31–50.

Anable, J., Lane, B. & Kelay, T. (2006). *An evidence base review of public attitudes to climate change and transport behavior* (Final Report). For the UK Department of Transportation. Retrieved from http://www.pdfwww.china-up.com:8080/international/case/case/1457.pdf

Awake! (2009, January). Are we running out of water? *Awake!* pp. 3–7. The Watch Tower Bible and Tract Society: The Jehovah's Witnesses. Retrieved from http://wol.jw.org/en/wol/d/r1/lp-e/102009001

Ayoade, J. O. (2003). *Climate change*. Ibadan, Nigeria: Vantage Publishers.

Baqir, M., Sobani, Z. Bhamani, A., Bhani, N. S. et al., (2012). Infectious diseases in the aftermath of monsoon flooding in Pakistan. Asian Pac. J. of Trop/Biomed; 2(1), 76-79. doi: 1016/5221-1691(11)60194-9

Bruinders, V., Canavan, K., Johnstone, S., Mabuza, M., Mattushak, P., & Spencer, J. (2009). Global warming: An assessment of knowledge, attitudes, and practices at Rhodes University (Final Report, Group 3), pp. 1–37. Retrieved from http://www.ru.ac.za/media/rhodesuniversity/content/environment/documents/Enviro%20Sci%20project%Gp%203%2009-10-16.pdf

Ekpoh, U. I. & Ekpoh, I. J. (2011). Assessing the level of climate change awareness among secondary school teachers in Calabar municipality, Nigeria: Implications for management effectiveness. *International Journal of Humanities and Social Science, 1*(3), 106–110.

Falaye, F .V. (2006). Numerical ability, course of study and gender differences in students' achievement in practical geography. *Research in Education, 76*, 33–42.

Falaye, F. V. (2009). Age and gender differences in students' attitudes towards social studies. *Ife Journal of Theory and Research in Education, 12*(1), 37–47.

Hegde, S. S., Murthy, M. S., Shalini, C. N., & Sandeep, K. R. (2012). Awareness of global warming among school teachers in coastal Karnataka. *Indian Journal Preventative and Social Medicine, 43*(4), 383–388.

Intergovernmental Panel on Climate Change [IPCC]. (2007). *Climate change 2007: The fourth assessment report.* Retrieved from http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

Ochieng, M. A., & Koshe, J. (2013). The level of climate change awareness and perception among primary school teachers in Kisumu Municipality, Kenya. *International Journal of Humanity and Social Science, 3*(2), 174–179.

Odjugo, A. O. P. (2001). Global warming and food production: A global and regional analysis. *African Journal of Environmental Studies, 2*(2), 85–91.

Odjugo, A. O. P., & Ikhuoria Isi, A. (2003). The impact of climate change and anthropogenic factors on desertification in the semi-arid region of Nigeria. *Global Journal of Environmental Science, 2*(2), 118–126.

Okobia, M. N., Bunker, C. H., Okonofua, F. E. & Osime, U. (2006). Knowledge, attitude and practice of Nigerian women towards breast cancer: A cross-sectional study. *World Journal of Surgical Oncology, 4*, 11-20. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1397833/pdf/1477-7819-4-11.pdf

Olaniyi, O. A., Ojekunle Z. O. & Amujo, B. T. (2013). Review of climate change and its effect on Nigeria ecosystem. *International Journal of African and Asian Studies - An Open Access International Journal, 1*, 57–65.

Ontario Ecological Literacy Resource (2011-12). *Connections to climate change: Through rich performance tasks in grade 10 science (Applied and Academic)*. Retrieved from http://www.ontarioecoschools.org/wp-content/uploads/2014/11/5EN_Science_10FIN.pdf

Oyakale, A. S. (2013). Impact of flooding on the health of coastal fishing folks in Epe division of Lagos state, Nigeria. *Journal of Human Ecology, 44*(2), 183–188.

Tranter, B., & Skribis, Z. (2011, November-December). Attitudes towards global warming, climate change and other issues among young Queenslanders. Paper presented at The Australian Sociological Association Annual Conference, Newcastle, Australia. Paper retrieved from: http://artsonline.monash.edu.aurlives/files/2013/05/Pes-76492-Tranter-fl.pdf

UNESCO Bangkok. (2012). *Education sector responses to climate change: Background paper with international examples.* Retrieved from http://unesdoc.unesco.org/images/0021/002153/215305e.pdf

Watson, J. T., Gayer, M., & Connolly, M. A. (2007). Epidemics after natural disasters. *Emerging Infectious Diseases, 13*(1), 1–5.

Yaqub, C. N. (2007). Desert encroachment in Africa: Extent, causes and impacts. *Journal of Arid Environment, 4*(1), 14–20.

Young, J. (2006). Black water rising: The growing global threat of rising seas and bigger hurricanes. *World Watch, 19*(5), 26–31.

## Authors

**Folajogun V. Falaye,** Ph.D., is a professor of the social sciences education and educational evaluation at the University of Ibadan, Ibadan, Nigeria. She has over 30 years of teaching and research experience at the secondary school and university. She teaches the social sciences courses and qualitative evaluation. She has published widely.

**Eugenia A. Okwilagwe,** Ph.D., is an Associate Professor in the Institute of Education, University of Ibadan, Ibadan, Nigeria. She holds a B.Ed. in geography, M.Ed. in Curriculum and Instruction, and Ph.D. in Educational Evaluation. She has a 16 years teaching and research experience at the tertiary level of education.

# THE DEVELOPMENT OF AN ASSIGNMENT CODING GUIDE FOR EVALUATING ICT-USAGE IN A 21ST CENTURY PRIMARY SCHOOL IN HONG KONG

Jackie W.W. Chan, Vicky C. Tam, Sandy S. Li, & Jacky Pow
Hong Kong Baptist University

**Abstract:** *This paper describes the development of a coding guide that was used to evaluate the use of information and communications technologies (ICT) in student assignments. Instrument design and pilot-testing was conducted in a Hong Kong Chinese primary government-subsidised school (I-School) with a school-based e-learning project. The design of the assignment coding guide was drawn from a lesson observation guide (Tam, Chan, Li, & Pow, 2014) that was developed for this e-learning project with reference to the Research Coding Guide for Student Work (2011). The research team developed the coding guide in recognition that it is important to examine not only 21st century skills, but also how teachers make use of ICT in their assignment design to enhance teaching and learning, as well as how the assignments provide opportunities for students to practice their ICT skills. The coding guide that was developed contains 14 items that measure ICT integration into assignments. These items relate to the following broad categories: (a) Student Learning Outcomes, (b) Learning and Teaching through Assignment, (c) ICT Use, and (d) ICT Enhanced Learning and Teaching. Rating was based on sample scripts of all written assignments (both paper-based and digital) in one learning unit assessed with different levels of academic performance (high, middle and low). Thirty-six sets of assignments from three major academic subjects of Chinese, English, and Mathematics between Primary Two (P2) and Primary Five (P5) were collected in the same primary school from September 2012 to December 2014. In this period, which spanned four continuous semesters, researchers discovered that the assignments developed from paper-based dominant assignments to paper-and-ICT-balanced assignments as students were required to post their assignments through the online platform (Microsoft SharePoint). Moreover, teachers provided more chances to allow students to implement their ICT skills and creativity, such as through student assignments, which transformed from simply attaching a student's drawing to attaching a relevant picture from the Internet.*

**Key words:** e-learning, information and communication technologies, teaching and learning

## Introduction

Over the last decade in Hong Kong, e-learning has been promoted at different levels. In an effort to enhance students' learning, a variety of information and communication technologies (ICT) have been incorporated into the design of student assignments. The introduction of ICT into assignments not only helps consolidate learning, deepen understanding and construct knowledge, but it helps teachers deliver interactive assignments that enhance students' learning experiences. Moreover it allows students to practice their 21st century skills when doing their homework assignments.

In 2011, the Education Bureau in Hong Kong announced that 21 projects had been selected to participate in the *Pilot Scheme on e-Learning in Schools*. Sixty-one schools involved in these projects received one-off funding to implement ICT into teaching and learning activities. Through the pilot scheme, schools in Hong Kong implemented ICT in order to enhance teaching and learning. For example, schools provided students with chances to take photos with digital devices and insert the photos into their writing compositions, assigned students to carry out self-and peer-evaluation tasks through an online platform, and allowed teachers to keep

track of the students' learning performance in an online platform (Cheung et al., 2014; Yuen, Lee, & Law, 2014). To maintain and improve the sustainability of ICT implementation in Hong Kong schools, the Education Bureau in Hong Kong proposed two actions, which it outlined in the consultation document for the Fourth Strategy on IT in Education (2014): "Enhancing the quality of e-learning resources" and "Renewing curriculum, transforming pedagogical and assessment practices."

I-School, a Hong Kong Chinese primary government-subsidised school founded in the early 1930s, was one of the schools that received funding to enhance its ICT implementation. In 2008, I-School piloted their school-based e-learning project for Primary Two (P2) classes. Prior to this time, the school did not use ICT in teaching and learning. Over the last 6 years, school administrators have built an IT-infrastructure and have revised the curriculum for ICT implementation which has made I-School one of the e-learning pioneers in Hong Kong.

In order to ensure the successful implementation of the e-learning project, school administrators clearly explained the scheme to parents who were interested in sending their child to I-School. Newly recruited teachers were also required to have basic ICT skills and be inducted into the e-learning project. In general, most of the stakeholders in I-School supported the project and the school received very little resistance in the process.

Through its involvement with the pilot scheme, I-School received funding to enhance its ICT implementation. The school also invited a research team to conduct a comprehensive evaluation of ICT implementation in the school. The research team evaluated ICT implementation from different dimensions, including assignment analysis. At the end of the evaluation, the research team proposed a number of actions to enhance I-School's ICT implementation, all of which were related to the two actions proposed by the Education Bureau's consultation document for the Fourth Strategy on IT in Education. The assignment coding guide that was developed proved useful for evaluating ICT-usage in Hong Kong primary school assignments. This guide could also potentially help evaluate ICT-usage in primary school assignments in different country settings.

**Assignment Analysis**

Assignments are important components of the learning process. As learning-related tasks that teachers give to their students to complete during and after class, assignments help students (a) understand the learning objectives, (b) understand their strengths and weaknesses in learning, and (c) identify their learning needs (Curriculum Development Council, 2014). Assignment analysis provides a valuable opportunity to evaluate how teachers make use of assignments to consolidate learning, deepen understanding, and construct knowledge for students. Research shows some positive correlation between student completion of assignments and student achievement (Rønning, 2011; Trautwein, Koller, Schmitz, & Baumert, 2002). Compared with paper-and-pencil assignments, students could learn even more with ICT-facilitated assignments when immediate feedback is given (Mendicino, Razzaq, & Heffernan, 2009). Analyses of ICT-facilitated assignments not only explore how assignments help students to learn, but also evaluate how teachers can make use of ICT to provide a better learning experience for their students.

The aim of this paper is to describe and examine a coding guide that was developed to evaluate how well ICT was implemented into student assignments in order to

enhance students' learning in I-School. We suggest that this assignment coding guide could provide a foundation for researchers and teachers who wish to evaluate ICT use in primary school assignments, an exploration that has rarely been explored in existing research.

## Development of the Assignment Coding Guide

The research team included three university academic staff members and one research officer, all with expertise in education and/or information technology, as well as three teachers from I-School.

Both the lesson observation guide (Tam et al., 2014) that was developed for this e-learning project, as well as the *Research Coding Guide for Student Work* (Innovative Teaching and Learning Research, 2011) that was developed by the Bill and Melinda Gates Foundation's Teacher Assignment/Student Work Project informed the design of the assignment coding guide. On top of the 21st century skills that were highlighted in the guide, the research team identified that it was also important to examine how teachers made use of ICT in assignment design to enhance students' learning. In all, the assignment coding guide developed in this project measured whether students could act as active learners in their learning, as well as how ICT could enhance assignment design.

The research team piloted a draft coding guide based on two assignment sets from I-School (P2 math and P3 Chinese) in the second semester of the academic year (AY) 2011-12 (In Hong Kong, each academic year (AY) includes two semesters: first semester is September until January and second semester is January until July). Four research team members were assigned as the raters. Each rater coded the assignment sets independently by using the draft coding guide. Coding on each item was then shared and discussed in a team meeting where consensus on the coding guide was reached. The research team modified and clarified some of the items as well as the point descriptors of the rating scale based on the raters' suggestions at the meeting. This process resulted in the completion of the first full version of the coding guide. The final coding on the two pilot cases together with a short explanation on each coding was summarized for future reference. In order to enhance rating reliability, all team members were able to refer to this coding summary throughout the project.

This assignment coding guide was used to code 36 assignment sets that were collected from the second semester of AY 2011-12 to the first semester of AY 2013-14. These assignment sets were selected based on nominations by I-School teachers who identified their respective lessons as exemplars of e-learning. Through observation and analysis of the lessons together with the assignment set of a teaching unit, the research team was able to make a comprehensive evaluation of ICT implementation in I-School. As coding proceeded, the team members also discussed and made minor justifications to the coding items.

## Structure and Content of the Coding Guide

The assignment coding guide includes 14 items. Using these items, the research team assessed the assignment design by determining how well ICT was integrated into teaching and learning and what opportunity students had to apply ICT skills. The coding guide begins with an overall introduction and detailed instructions to guide the raters. The guide also requires the raters to list the category of the assignment that was included in the assignment sets.

The 14 items in the coding guide include:

- five items on student learning outcomes: *collaboration, knowledge building, real-world problem-solving &*

*innovation, creativity, & innovation*, and *students' use of digitalized media*;

- two items on learning and teaching through assignment category: *self-regulated learning and handling individual differences*;
- three items on ICT use*: use of ICT for learning, use of ICT for designing assignments, and use of interactive ICT components*; and
- four items on ICT enhanced learning and teaching: *ICT use in collaboration, ICT use in real-world problem-solving & innovation, ICT use in students' creativity and innovation, and handling individual differences in ICT-supported learning environments.*

The items in the coding guide are designed for global rating. Rating on each item is based on the highest score achieved by the written assignments (both paper-based and digital) in one learning unit completed by different academic level students (high, middle and low). All items are coded on a 4-point (1 to 4) scale with detailed item-specific descriptors at each point. The coding scale for teaching and learning items is structured as follows:

1. The target behaviour/outcome is not observed in the assignment set.
2. The target behaviour/outcome is minimally observed in the assignment set.
3. The target behaviour/outcome is somewhat observed in the assignment set.
4. The lesson demonstrates optimal manifestation of the target behaviour / outcome in the assignment set.

The coding scale for ICT enhancement items is structured as follows:

1. ICT is not used in the assignment set for the target behaviour/outcome.
2. ICT is used in the assignment set but the target behaviour/outcome can be achieved without the support of ICT.
3. ICT use in the assignment set enhances the target behaviour/outcome.
4. ICT use in the assignment set is essential for the target behaviour/ outcome

One sample coding item and the respective point descriptors are included in Appendix A. Adjustments in ratings are applied based on the grade level of the students.

## Research Design, Data Collection, and Reliability Issues

This study used a descriptive research design to evaluate the ICT-usage on students' assignments. In the four consecutive semesters from the second semester of AY 2011-12 to the first semester of AY 2013-14, the research team collected 36 sets of assignments from I-School, with 12 sets collected from each of the 3 major academic subjects of Chinese, English and Mathematics. As shown in Table 1, twelve sets were from P2, twelve sets were from P3, nine sets were from P4, and three sets were from P5. These assignment sets were coded by the same two research team members who used the assignment coding guide developed in this research. Based on the coding results, the research team could evaluate the ICT-usage on students' assignments in I-School.

Each assignment set included the plan of the lesson chosen for observation and nine copies of students' work completed for that particular teaching unit. The research team encouraged teachers to provide all evidence of students' work for accurate coding. Since this study focused on evaluating assignments for selected lessons and teaching units, the research team did not collect cross-academic-subject assignments, project learning assignments, or exercises supplied by external providers. In order to observe how individual differences were handled in assignments, we collected students' work at different levels of academic performance (high, middle, and low) within each set of assignments. The research team took note of the fact that I-School grouped students with similar academic performance in the

same class at each grade level. This streaming arrangement informed lesson design and teaching, as teachers could adjust their teaching based on the overall class ability rather than students' individual learning needs. Consequently, in this project students' work was collected from different classes and different grade levels in order to include students at different academic ability levels.

Table 1
*Distribution of Assignment Sets Collected from I-School*

| | 2nd Sem./ AY 2011-12 | 1st Sem./ AY 2012-13 | 2nd Sem./ AY 2012-13 | 1st Sem./ AY 2013-14 |
|---|---|---|---|---|
| P2 | Chinese, English, & Math | Chinese, English, & Math | Chinese, English, & Math | Chinese, English, & Math |
| P3 | Chinese, English, & Math | Chinese, English, & Math | Chinese, English, & Math | Chinese, English, & Math |
| P4 | | Chinese, English, & Math | Chinese, English, & Math | Chinese, English, & Math |
| P5 | | | | Chinese, English, & Math |
| Number of assignment sets | 6 | 9 | 9 | 12 |

To establish inter-rater reliability, all 36 sets of assignments were double-coded by the same two research team members throughout this project. Inter-rater agreement was found to be 90.28% (455 out of 504 item-rating), while 94.23% inter-rater disagreement was found to be within a one-point difference.

## Overview of Collected Assignment Sets

Assignment sets reviewed in this study included student work for both in-class activities and homework assignments. In general, paper-based assignments dominated each assignment set. Paper assignments included individual and group worksheets containing multiple choice, matching, fill-in-the-blanks and short answer questions. ICT-integrated assignments were used in some in-class activities. For example, students were required to answer teachers' questions on Microsoft SharePoint, an online platform developed by Microsoft for file sharing and collaboration. In what follows we provide an overview of the assignment types and formats that were used within each of the three academic subjects.

For the Chinese language subject, some of the assignment sets incorporated ICT into students' in-class exercises. One of the exemplar assignment sheets required students to work in pairs to construct a metaphor sentence. For example, students were required to select one of the Hong Kong attraction photos prepared by the teacher on Microsoft SharePoint and then insert the photo into the assignment worksheet that matched the sentence they had made. Some of the assignments also required students to submit their sentence-making work through Microsoft SharePoint, and higher-ability students were expected to attach photos to their submission.

The implementation of ICT in the English language subject assignment sets was similar to the implementation of ICT in the Chinese language subjects. Each set of English language assignments contained a number of paper-based worksheets. In some assignment sets, students used a

collaborative worksheet, which required online submission during class through Microsoft SharePoint, although students also needed to submit an individual version after the lesson. Microsoft SharePoint was also used for pre-lesson activities in some lessons, for example, when teachers invited students to vote online before the lesson started and then incorporated the results of the vote into the lesson. Moreover, teachers posted revision questions on SharePoint to evaluate students' learning outcomes.

Mathematics assignment sets also included a number of paper-based worksheets and supplementary exercises. Some of the digital homework assignment sheets included accessible weather-related hyperlinks so that students could retrieve up-to-date weather information and then give answers on the assignment sheets. In an exemplary assignment, teachers provided a chance for students to practice generic skills by drawing a digital greeting card (Microsoft Word document file) as an assignment.

In general, it is observed that although the I-School had made considerable effort to integrate ICT-usage into the lesson and lesson activities, few ICT elements had been integrated into students' assignments. The 36 sets of assignments across the three major academic subjects (Chinese, English and Mathematics) in I-School were mostly paper-based assignments with a similar format. The use of ICT in the assignments was mostly limited to retrieval and uploading of files and photos.

It was also observed that in paper-based homework assignments, teachers provided suggested words as a hint for lower-ability students to complete their assignments, while higher-ability students were required to answer the questions without any hints. In ICT-integrated homework assignments, photos were provided to lower-ability students to insert into their assignment, while higher-ability students were asked to search and insert a photo from the Internet into their assignments.

## Assignment Coding Findings

The coding analysis focused on comparing ratings on the 36 assignment sets across academic subjects and across academic levels. Cronbach's Alpha of the 14 items in the coding guide for these 36 assignment sets was reported to be 0.82.

### Overall Analysis by Assignment Coding Category

As shown in Table 2, data drawn from these 36 assignment sets indicated that Student Learning Outcomes items (M=2.21, SD=0.56) obtained the highest average score and ICT Enhanced Learning and Teaching items (M=1.53, SD=0.52) obtained the lowest average score across categories.

Table 2
*Mean Score and Standard Deviation Achieved by the 36 Sets of Assignments*

| | Mean | SD |
|---|---|---|
| **Student Learning Outcomes** | **2.21** | **0.56** |
| Collaboration | 2.69 | 1.08 |
| Knowledge building | 2.50 | 0.99 |
| Real-world problem-solving and innovation | 2.25 | 0.92 |
| Creativity and innovation | 2.24 | 1.11 |
| Students' use of digitalized media | 1.39 | 0.49 |
| **Learning and Teaching through Assignment** | **2.00** | **0.66** |
| Self-regulated learning | 1.93 | 0.68 |
| Handling individual differences | 2.07 | 0.84 |
| **ICT Use** | **1.90** | **0.54** |
| Use of ICT for learning | 2.13 | 0.75 |
| Use of ICT for designing assignments | 1.89 | 0.52 |
| Use of interactive ICT components | 1.69 | 0.74 |
| **ICT Enhanced Learning and Teaching** | **1.52** | **0.52** |
| ICT use in collaboration | 1.79 | 0.99 |
| ICT use in real-world problem-solving and innovation | 1.60 | 0.62 |
| ICT use in students' creativity and innovation | 1.36 | 0.83 |
| Handling individual diff. in ICT-supported learning environments | 1.36 | 0.59 |

For individual items, collaboration (M=2.69, SD=1.08) and knowledge building (M=2.50, SD=0.99) obtained higher mean ratings (higher than 2.50), while low mean ratings (less than 1.50) were reported for students' use of digitalized media (M=1.39, SD=0.49), ICT use in students' creativity and innovation (M=1.36, SD=0.83), and handling individual differences in *ICT*-supported learning environment (M=1.36, SD=0.59). The major reason for the relatively high scores on student learning outcomes items is that the assignment sets included students' in-class activity assignments. Because of this, when a teacher performed an in-class activity that allowed collaboration or knowledge building, the rating for the assignment coding would be high. Based on the above scores, it could be concluded that ICT could be used to digitalize paper-based assignments, but ICT only made slight changes in assignment design and process and in the enhancement of learning and teaching.

## Overall Analysis by Academic Subject

The 36 assignment sets collected from three academic subjects shared similar score profiles on a number of coding categories (see Table 3). Using a mean rating difference greater than 1 as the threshold, ratings on all ICT Use and Enhancement items were found to be similar across academic subjects. Additionally, ratings were reported to be similar across academic subjects on learning and teaching through assignment and student learning outcomes, while the mean score difference obtained on knowledge building was larger than 1 between Chinese language (M=1.96, SD=0.81) and Mathematics (M=3.00, SD=0.88).

Subject-specific profiles were observed in relation to learning outcomes and to ICT use and enhancement. In regard to subject-based Student Learning Outcomes, Chinese language assignment sets obtained higher rating on creativity and innovation (M=2.50, SD=0.72), while English assignment sets obtained higher rating on knowledge building (M=2.54, SD=1.02) compared with other learning outcomes. Moreover, mathematics assignment sets obtained higher scores on knowledge building (M=3.00, SD=0.88) and real-world problem-solving and innovation (M=2.83, SD=0.63), which indicated that mathematics assignment sets were useful for developing students' subject

knowledge, problem solving skills, and creativity.

For ICT Use and Enhancement on Learning and Teaching items, mathematics assignment sets obtained higher mean scores in ICT use. Scores on use of ICT for learning (M=2.33, SD=0.76) and use of interactive ICT components (M=2.00, SD=0.72) were higher than Chinese language and English language subjects. For ICT Enhanced Learning and Teaching items, English assignment sets (M=2.17, SD=0.96) obtained higher scores than Chinese (M=1.50, SD=0.98) and Mathematics (M=1.71, SD=0.95) on ICT use in collaboration. However, all three academic subjects obtained low scores in ICT use in real-world problem-solving and innovation and ICT use in students' creativity and innovation.

Based on the average mean scores obtained by the three academic subjects (English, Chinese and Mathematics), the design of the assignments allowed students to enhance their learning outcomes and provided chances for students to practice their ICT skills. Mathematics assignment sets performed better than other subjects on knowledge building, real-world problem-solving and innovation, creativity and innovation, use of ICT for learning and use of interactive ICT components. These scores reflect the fact that mathematics assignments were able to make connections between subject content and learning outcome. Therefore, students were allowed to demonstrate their subject knowledge, problem solving skills, and creativity when ICT was embedded into the learning and teaching. On the other hand, the mean score differences between academic subjects could be explained by variations in subject content, objective, and teaching method. For instance, Chinese assignments had better performance on students' creativity and innovation by including different presentation methods in the assignments like drawing or inserting a digitalized photo together with a short composition.

Table 3
*Mean Score and Standard Deviation by Academic Subject*

| | Mean (SD) | | |
|---|---|---|---|
| | Chinese | English | Mathematics |
| **Student Learning Outcomes** | **2.11 (0.33)** | **2.10 (0.62)** | **2.42 (0.64)** |
| Collaboration | 2.75 (1.11) | 2.75 (0.99) | 2.58 (1.18) |
| Knowledge building | 1.96 (0.81) | 2.54 (1.02) | 3.00 (0.88) |
| Real-world problem-solving and innovation | 1.91 (0.97) | 2.00 (0.83) | 2.83 (0.64) |
| Creativity and innovation | 2.50 (0.72) | 1.75 (1.03) | 1.45 (0.51) |
| Students' use of digitalized media | 1.41 (0.50) | 1.45 (0.51) | 1.25 (0.44) |
| **Learning and Teaching through Assignment** | **2.00 (0.64)** | **2.04 (0.67)** | **1.95 (0.67)** |
| Self-regulated learning | 1.95 (0.75) | 2.00 (0.59) | 1.83 (0.70) |
| Handling individual differences | 2.04 (0.69) | 2.08 (0.97) | 2.08 (0.88) |
| **ICT Use** | **1.89 (0.51)** | **1.73 (0.61)** | **2.08 (0.45)** |
| Use of ICT for learning | 2.13 (0.68) | 1.92 (0.78) | 2.33 (0.76) |
| Use of ICT for designing assignments | 1.95 (0.46) | 1.79 (0.72) | 1.92 (0.28) |
| Use of interactive ICT components | 1.58 (0.65) | 1.50 (0.78) | 2.00 (0.72) |
| **ICT Enhanced Learning and Teaching** | **1.51 (0.54)** | **1.54 (0.52)** | **2.53 (0.52)** |
| ICT use in collaboration | 1.50 (0.98) | 2.17 (0.96) | 1.71 (0.95) |
| ICT use in real-world problem-solving and innovation | 1.67 (0.64) | 1.33 (0.48) | 1.79 (0.66) |
| ICT use in students' creativity and innovation | 1.50 (0.88) | 1.17 (0.56) | 1.41 (0.97) |
| Handling ind. diff. in ICT-supported learning environments | 1.38 (0.49) | 1.50 (0.78) | 1.20 (0.41) |

**Overall Analysis by Grade Level**

In the 36 assignment sets collected from I-School, 24 sets were collected from junior primary teaching units (P2 to P3), and 12 sets were collected from senior primary teaching units (P4 to P5) (see Table 4). Using a mean rating difference greater than 1 as the threshold, ratings were reported to be similar across academic level, while senior primary assignment sets performed better than junior primary sets in some specific items.

By comparing student learning outcomes items across academic level, senior primary assignment sets (M=2.71, SD=1.30) obtained higher scores on creativity and innovation than junior primary assignment sets (M=2.00, SD=0.92). However, it was observed that teachers more often included tasks that allowed students to illustrate their creativity in senior primary assignment sets. Although both academic levels obtained low scores on students' use of digitalized media (junior, M=1.23, SD=0.42 and senior, M=1.67, SD= 0.48), senior primary assignment sets obtained higher scores than junior primary assignment sets as more assignments required students to insert digital resources, i.e. photos, into their assignments.

For ICT Use in the assignment sets, senior primary assignment sets obtained higher scores in use of ICT for learning and use of interactive ICT components than junior primary assignment sets. It was observed in senior primary assignments that a variety of ICT elements had been provided for students, such as Flash and Wikipedia, to enhance students' motivation to complete their assignments. On the other hand, teachers also required students to insert or modify digital resources as a part of the students' work.

Finally, both junior and senior academic levels obtained low scores on ICT Enhanced Learning and Teaching (junior, M=1.47, SD= 0.54 and senior, M=1.65, SD= 0.47). However, senior primary assignment sets (M=2.00, SD=0.93) obtained higher scores on ICT use in collaboration than in junior primary assignment sets (M=1.69, SD=1.01). This is because I-School taught their students to use online discussions in SharePoint during the second semester of P2. Senior level students were used to working on the online discussion platform after having more than one year of practice; most of the senior students could retrieve material for their collaboration by themselves. Hence, the use of ICT for collaboration did not affect the progress of the lesson, as teachers were more likely to use ICT for students' collaboration.

In all, assignments of both the junior and the senior academic levels showed similar score profiles, while senior primary assignment sets obtained better achievement on creativity and innovation, use of ICT for learning, use of interactive ICT components, and ICT use in collaboration. This finding reflects the fact that senior primary (P4 and P5) students were more mature, which allowed teachers to have a larger variety for ICT implementation into assignment design.

Table 4
*Mean Score and Standard Deviation by Grade Level*

| | Mean (SD) | |
|---|---|---|
| | Junior Level (P2 & P3) | Senior Level (P4 & P5) |
| **Student Learning Outcomes** | **2.12 (0.51)** | **2.39 (0.63)** |
| Collaboration | 2.63 (1.16) | 2.83 (0.92) |
| Knowledge building | 2.54 (0.87) | 2.42 (1.21) |
| Real-world problem-solving and innovation | 2.21 (0.99) | 2.33 (0.76) |
| Creativity and innovation | 2.00 (0.92) | 2.71 (1.30) |
| Students' use of digitalized media | 1.23 (0.42) | 1.67 (0.48) |
| **Learning and Teaching through Assignment** | **1.96 (0.71)** | **2.08 (0.55)** |
| Self-regulated learning | 1.88 (0.70) | 2.04 (0.92) |
| Handling individual differences | 2.04 (0.62) | 2.13 (0.68) |
| **ICT Use** | **1.86 (0.56)** | **1.99 (0.50)** |
| Use of ICT for learning | 2.02 (0.73) | 2.33 (0.76) |
| Use of ICT for designing assignments | 1.79 (0.50) | 2.08 (0.50) |
| Use of interactive ICT components | 1.77 (0.69) | 1.54 (0.83) |
| **ICT Enhanced Learning and Teaching** | **1.47 (0.54)** | **1.65 (0.47)** |
| ICT use in collaboration | 1.69 (1.01) | 2.00 (0.93) |
| ICT use in real-world problem-solving and innovation | 1.56 (0.62) | 1.67 (0.64) |
| ICT use in students' creativity and innovation | 1.29 (0.74) | 1.50 (0.98) |
| Handling ind. diff. in ICT-supported learning environments | 1.33 (0.63) | 1.41 (0.50) |

## Conclusion

The research team's analysis, which used the assignment coding guide that was developed for this study, found that the implementation of ICT in assignments has not significantly transformed students' learning and teaching in I-School. Based on the average scores obtained by these 36 assignment sets, most were lower than 3.00 over 14 coding items, whether they were grouped by subject or by grade level. Moreover no item in ICT use and ICT enhanced learning and teaching obtained higher than 3.00 when they were grouped by subject or grade level.

In general, I-School teachers balanced their use of paper-based and computer-based assignments so that students would have ample chance to practice their hand-writing and computer skills. However, nearly half of the computer-based assignments could be described as a "digitalized paper-based assignment": for example, asking students to answer a question, construct a sentence, or upload the completed worksheet to the online platform. ICT implementation could help teachers to better handle students' assignments and could allow teachers to provide feedback in the online platform. However, it could not enhance students' learning by commenting on other students' work on the online platform or enhance their learning motivation through audio or visual support or through instant feedback to the students.

When teachers are planning to implement ICT into assignments, they should think about how to foster new learning experiences and learning outcomes that can only be achieved by using ICT. Further, ICT implementation should not only be involved in assignment design; it should also be involved at the curriculum level. According to our findings, teachers should put effort into enhancing students' learning outcomes with respect to three areas: student's use of digitalized media, ICT use in students' creativity and innovation, and handling individual differences in ICT-supported learning environments. To improve performance in these three areas, teachers may encourage students to search, edit, and attach Internet resources, such as photos, into their assignments. Moreover it was observed that students within the same

class received identical assignments and that these exercises seldom provided variation in attainment of learning outcomes for students. Teachers should make use of ICT to prepare and distribute suitable assignments for students that cater to students' individual's academic abilities.

## Challenges, Contributions, and Further Development

A number of challenges were faced during the development of this coding guide and in collecting and coding assignment sets. First of all, assignment set collections required considerable human resources. Even though I-School staff on the research team were responsible for data collection, assignment sets were only available several weeks after the teaching unit was completed. It took a long period of time for I-School research team members to retrieve the assignment sets from their colleagues. Second, I-School teachers were not always sure what should be included in the assignment sets. In the first and second academic year of assignment collection, the research team encouraged teachers to include as much evidence as possible to allow flexibility for teachers. However, it was observed that some of the assessment activities listed in the lesson plans were not included in the assignment sets submitted to the research team. To address this challenge, the research team prepared a guideline for I-School teachers in the final semester of data collection, which listed all common assignment formats. Teachers could then check against the list before submitting the assignments to the research team. Third, double-coding 36 assignment sets took considerable time and placed heavy demands on human resources since each assignment set included nine students' work. Raters were required to read through each student's work to explore how teachers handled individual differences between different classes.

The assignment coding guide was developed to appraise how ICT facilitates learning and teaching through assignments in the I-School. Based on the ratings that were generated, the research team provided a report with suggestions to school administrators and teachers so that they may improve assignment design with better ICT integration. The coding guide not only focused on how to digitalize paper-based assignments; it also aimed to examine how teachers implement ICT in assignment design to enhance students' motivation, consolidate learning, deepen understanding, construct knowledge, handle individual differences, and practice their ICT skills (Tam, 2009). The coding guide will potentially be beneficial to primary schools in Hong Kong and has provided direction for how ICT should be integrated into assignments. Further work will be needed in order to establish the psychometric qualities of the instrument, including predictive validity.

## References

Alberta Education (2012). *Bring your own device: A guide for schools.* Retrieved from http://education.alberta.ca/admin/technology/research.aspx

Cheung, K. S., Ming, L. K., Yanjie, S., Leung, C. H., Ying, K. W., Ling, N. H., & Luen, K. S. (2014). *Practices of teacher development and partnership: How to achieve sustainable and scalable eLearning in school education? – Case studies of Pilot Scheme on e-Learning in schools*. Retrieved from http://edbsdited.fwg.hk/e-learning/chi/file/HKIEdpresentation.pdf

Education Bureau. (2014). *The fourth strategy on information technology in education: Realising IT potential – Unleashing learning power. A holistic approach.* Retrieved from

http://www.edb.gov.hk/attachment/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/it-in-edu/Policies/4th_consultation_eng.pdf

Innovative Teaching and Learning Research (2011). *Coding guide for student work*. Retrieved from http://itlresearch.com/images/stories/reports/ITL%20Research%20Surveys%20 and%20Forms.pdf

Mendicino, M., Razzaq, L., & Hefferman, N. T. (2009). A comparison of traditional homework to computer-supported homework. *Journal of Research on Technology in Education, 41*(3), 331–359.

Rønning, M. (2011). Who benefits from homework assignments? *Economics of Education Review, 30*(1), 55–64. doi: 10.1016/j.econedurev.2010.07.001

Tam, V. C. (2009). Homework involvement among Hong Kong primary school students. *Asia Pacific Journal of Education, 29*(2), 213–227.

Tam, V. C., Chan, J., Li, S. S., & Pow, J. (2014, April). *The development and use of an observation coding guide for assessing ICT-facilitated lessons in 21st century primary school classrooms in Hong Kong.* Paper presented at the annual seminar for the International Society for Teacher Education, Antalya, Turkey.

Trautwein, U., Koller, O., Schmitz, B., & Baumert, J. (2002). Do homework assignments enhance achievement? A multilevel analysis in 7th-grade mathematics. *Contemporary Educational Psychology, 27(1), 26–50. doi: 10.1006/ceps.2001.1084*

Yuen, A., Lee, Y., & Law, N. (2014). *What can schools learn from the e-Learning pilot scheme evaluation study*. Retrieved from http://edbsdited.fwg.hk/e-learning/chi/file/HKUpresentation.pdf

## Appendix A

Sample Coding Items

1. Collaboration

Question: Does the assignment allow students to work with others in pairs or groups on some portion of the task to develop a joint product, design, or answer to a complex question?

(Collaboration occurs when a student works with others in pairs or groups on some portion of the assignment to develop a joint project, design, or answer to a complex question. Collaboration is more than simply helping each other: students must have shared responsibility for the work and jointly own the task).

| | | | | |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |

Remarks:

**0** = There is not enough information to code the assignment.

**1** = The assignment **does not involve pair or group work**: students work individually. If working together is not explicitly mentioned in the assignment, assume that it is not required.

**2** = The assignment **requires students to work together** in pairs or groups, BUT students do not share responsibility for a joint outcome or product.

**3** = The assignment **requires collaboration with other people:** they have **shared responsibility** for joint outcome or product, BUT the assignment does not require students to make substantive decisions together: it is feasible for students to complete the assignment without coordinating and negotiating with their teammates about important aspects of the assignment.

**4**=Students have **shared responsibility** for a joint outcome or product, AND the assignment requires students to make **substantive decisions** together about the content, process, or product of their work.

## Authors

**Jackie W.W. Chan**, is a doctoral candidate at Hong Kong Baptist University. He has attended several ISfTE seminars and is the current webmaster for the ISfTE website.

**Vicky C. Tam**, Ph.D., is a professor in the Department of Educational Studies at Hong Kong Baptist University. Her research interests include family and child development, gender studies, and qualitative research methods.

**Sandy S. Li**, Ph.D., is a professor and the head of the Department of Educational Studies at Hong Kong Baptist University. He was a co-convener or the 2013 ISfTE seminar. His research interests include ubiquitous learning, EEG & brain-computer interface [BCI], leadership in ICT implementation, socio-cognition in computer supported learning environments, simulation and modelling in education, and conceptual change in science education.

**Jacky Pow**, Ph.D., is an associate professor and program director of the Diploma in Education Program in the Department of Educational Studies at Hong Kong Baptist University. His research interests are application of ICT in teaching and learning, learning theories and pedagogy, formal modeling for ICT teaching experience sharing, and information access behaviour and human cognitive styles. He was a co-convener or the 2013 ISfTE seminar and currently serves as the secretary-general of ISfTE.

# ENHANCING QUALITY IN BUSINESS EDUCATION CURRICULUM DELIVERY FOR UNEMPLOYMENT REDUCTION IN EKITI STATE NIGERIA

Ehis V. Elemure
Lagos State Teaching Service Commission
and
Clement Boluwaji Elemure
Federal Polytechnic Ado Ekiti, Nigeria

**Abstract:** *The role of quality education in nation building cannot be overemphasized as no nation can grow beyond the level of education it offers its citizenry. In the same vein, no country can develop meaningfully without a well-developed vocational education programme. Business Education is geared towards the attainment of skills, values, and abilities that prepare its beneficiaries to enter into a specific job or occupation. This paper reports on how the quality of business education in Ekiti State, Nigeria could be enhanced to achieve this objective. Eighty business education lecturers and their students completed questionnaires on the 'Funding of Business Education in Nigeria; Issues and Challenges' (FBENIC) and the Key Informant Interview (KII) schedule. Three research questions were answered. Weighted mean and standard deviation were used in the analyzed data. Any item with a weighted mean value of 3.00 and above was regarded as agreed or adequate. A mean value below 3.00 was assumed as disagree or inadequate. Results indicated the need for better funding, effective management of suitable curriculum, recruitment of qualified teachers, provision of necessary facilities and educational research. Major obstacles include: Poor funding of business education, inadequate technological orientation, government as the sole financier, diversion and misappropriation of funds, inadequate records of materials and facilities allocated for the business education programme. Business education offers a possible solution to the perennial problem of insecurity and insurgency, unemployment and poverty if its potentials are carefully harnessed through an enhanced curriculum delivery system.*

**Key words:** business education in Nigeria, unemployment, skills and technological orientation, funding of business education

## Introduction

The success of any system of education according to Bolarinwa (as cited in Ogunribido, 2005) hinges on proper planning, efficient administration, and adequate financing. According to Bolarinwa, the provision of adequate and balanced financial support for all educational services is central to the achievement of the nation's educational goals.

Curriculum refers to the means and materials with which students will interact for the purpose of achieving identified educational outcomes. To determine what constitutes those means and materials, educators must decide what we want the curriculum to yield. We must also ask what will constitute the "educated" individual in our society (Corwin, 2011). The body of a curriculum is principally meant to enable students to meet the needs of the society and encourage positive change and growth.

As Corwin (2011) observed, the curriculum categories employed by most educational institutions include: explicit, implicit, null, and extra/co-curricular. Business education aptly employs the explicit curriculum because its subjects promote the skills and knowledge that students are expected to acquire. Because this is the core purpose of

running the programme, it is expected that sufficient attention and resources will be devoted to the programme.

Ayeni (2006) viewed funding as the art of providing or making money available for a purpose or in order to run a programme. It involves all the inputs that make a programme efficient in terms of capital, materials, and human resources. It therefore refers to physical appropriation of funds for business education. Funding of business education is no doubt capital intensive. Given that this aspect of education can help to create more jobs and revitalize the economy of the country, the Nigerian government has been able to make some concerted effort in the area of funding. For example, in an attempt to tackle the problem of financing education in the country, the federal government established several funding bodies including: Education Tax Fund, Petroleum Tax Fund, Industrial Training Fund, and Tertiary Education Trust Fund (TETFUND).

Government funding of the educational sector has, however, faced pressures from other sectors of the economy that require large capital investments to ensure development. Adesina (as cited in Fasae & Elemure, 2008) suggested that for any nation to be economically vibrant its constituents must be fully equipped with the relevant skills, knowledge, and aptitudes that will help them effectively function and contribute to the development and growth of the nation. This knowledge contributes to the production of manpower and harnesses other resources by bringing them into cooperative relationship. It also helps yield the necessary goods and services that the society wants and needs. Business education plays a vital role in equipping its recipients with the ability to become economically efficient and effective.

Ajayi (as cited in Adeosun & Ogunribido, 2014) argued that it behooves stakeholders in the area of education to provide funds that will help procure required materials, equipment, and facilities. The provision of adequate funds for business education programmes to ensure the production of technology-based business educators is a fundamental issue that demands urgent attention. Funds are needed to provide qualified lecturers, computers, classrooms, laboratories, and other modern gadgets that can contribute to quality delivery of the programme. Ayeni (2006) further posited that the funding of vocational (business) education cannot be left in the hands of the government alone as the government has sought to share public and private collaboration and joint responsibility for the costs of program design.

Business education has not been adequately funded to produce competent manpower for the nation's industries. According to Enijuni and Aina (2008), this inadequacy has adversely affected the overall output of the nation's industrial sector as half-baked business education graduates of tertiary institutions ultimately end up manning the business activities in the country. Aduwa-Ogiegbaen and Imogie (as cited in Enijuni & Aina, 2008) found that the funding of the educational system and the financing of high technology to support the system have been serious problems in Nigeria. In many African countries including Nigeria, personal and sectional interests have overwhelmingly influenced the disbursement of funds to various sectors of the economy, such that sometimes funds allocated for educational development purposes are embezzled or diverted by government officials.

Igwe (as cited in Eze, 2013), with reference to the *National Summit on Higher Education*, posited that the level of funding in the educational system has resulted in a lack of well-equipped libraries, laboratories, and workshops as well as

obsolete and outdated equipment, which is not quickly updated. In recognition of the peculiar nature of business education stemming from funding problems and the economic situation of the country, Oke (as cited in Eze, 2013) opined that education is an expensive social service that requires adequate financial provision from all tiers of government if successful implementation of the education programmes is to occur. Consequently, this study examines the need for funding and the problems that militate against adequate funding which would enhance the quality of business education in Nigeria.

Government financial allocation to the educational sector in Nigeria has been abysmally low in comparison with other countries. This explains why many vital areas of development in key sectors of the economy are underdeveloped. For instance, in 2013, the educational sector earned a paltry 8% of the national budget. This is disbursed (if wholly appropriated) among the 3 tiers of education, research centres, and other ancillary institutions. Table 1 compares Nigeria's budgetary allocation to education with 19 other countries.

Table 1
*Comparison of Budget Allocation to Education Across 19 Countries*

| Country | % Budget Allocation to Education | Position |
|---|---|---|
| Ghana | 31.0 | 1st |
| Cote d'Ivoire | 30.0 | 2nd |
| Uganda | 27.0 | 3rd |
| Morocco | 26.4 | 4th |
| South Africa | 25.8 | 5th |
| Swaziland | 24.6 | 6th |
| Mexico | 24.3 | 7th |
| Kenya | 23.0 | 8th |
| United Arab Emirates | 22.5 | 9th |
| Botswana | 19.0 | 10th |
| Iran | 17.7 | 11th |
| USA | 17.1 | 12th |
| Tunisia | 17.0 | 13th |
| Lesotho | 17.0 | 14th |
| Burkina Faso | 16.8 | 15th |
| Norway | 16.2 | 16th |
| Columbia | 15.6 | 17th |
| Nicaragua | 15.0 | 18th |
| India | 12.7 | 19th |
| Nigeria | 8.4 | 20th |

Source: World Bank, 2012

As of 2013, Nigeria had 114 approved universities which each shared N426.53bn with other research institutions. This challenge may make it difficult to adequately provide for the equipment and facilities that will guarantee the effective education of Nigerian youth.

## The Problem

For a nation to be economically vibrant, the key drivers of the economy must be adequately equipped with the requisite skills, knowledge, and aptitudes that will enable them to both contribute to, and synergistically harness, resources that satisfy the society's needs for goods and services. Business education plays a vital role in equipping its recipients with these necessary skills and know-how. It also prepares students for economic independence. However, the real state of the economy is at variance with these expectations. Production companies are

folding up despite huge investments and it is becoming increasingly difficult to start small scale businesses that can thrive. The immediate and remote cause appears to be lack of requisite management dynamics and feeble accounting and entrepreneurial skills. This study, therefore, investigates how quality business education curriculum can be enhanced to redress these perceived anomalies.

The following research questions served as the bedrock of this study:

1. What are the justifications for funding of business education in Nigeria?
2. What are the constraints to effective funding of the business education programme in Nigeria?
3. Are the funds provided by different sources to run the business education programme in Nigeria inadequate?

Null hypothesis: There is no significant difference in the responses of business education lecturers and their students in Ekiti State.

Table 2
*Comparison of the Responses of Business Education Lecturers and their Students in Ekiti State.*

| Respondents | N | X | SD | df | t | sig |
|---|---|---|---|---|---|---|
| Lecturers | 80 | 60.99 | 3.556 | 480 | 0.375 | 0.708 |
| Students | 402 | 61.09 | 3.626 | | | |

Table 2 indicates that the t-value of 0.375 is not significant at 0.05 ($p>0.05$). Hence, the null hypothesis was accepted. This implies that there is no significant difference in the responses of the lecturers and students of business education. These findings support Eze's (2013) argument that, in reference to the *National Summit on Higher Education*, the level of funding in the educational system has resulted in a lack of well-equipped libraries, laboratories and workshops as well as obsolete and outdated equipment that has not been replaced.

## Methodology

The study was carried out among lecturers, business educators, and students in the various tertiary institutions in Ekiti State, Nigeria. A total of eighty lecturers, business educators, and students were randomly sampled for the study. The instrument used for the study was a questionnaire titled: *Funding of Business Education in Nigeria: Issues and Challenges* (FBENIC), which included 30-items (see Appendix A). In the first two parts of the questionnaire, respondents were asked to rate each of the items on a four-point Likert scale of strongly agree (SA) = 4; agree (A) = 3; disagree (D) = 2; and strongly disagree (SD) = 1. In the last part of the questionnaire, respondents were asked to rate each of the items on a four-point scale of very adequate (VA) = 4; adequate (A) = 3; not adequate (NA) = 2; and grossly inadequate (GI) = 1. The instrument was assessed for both face and content validity by business education experts. Key informant interview sessions were also held with ten lecturers, ten business educators, and ten students.

### Data Analysis and Decision Rule

Weighted mean, t-test and standard deviation were used to answer the research questions. A cut-off point (arithmetic mean) of 3.00 was used to determine the items that were in agreement or in disagreement. Any item with a weighted mean value of 3.00 and above was regarded as agree or adequate while any item with a mean value below 3.00 was regarded as

disagree or inadequate. Responses from the key informant interviews were embedded in the discussions following transcription and content analysis.

## Results

**Research Question 1:** What are the justifications for funding of business education in Nigeria?

Table 3
*Mean Responses on Justifications for Funding of Business Education in Nigeria*

| S/N | Items | Mean | SD | Decision |
|---|---|---|---|---|
| 1 | Development of suitable curriculum | 4.40 | 0.12 | Agree |
| 2 | Planning, monitoring and effective management of the programme | 4.36 | 0.79 | Agree |
| 3 | Recruitment of qual. business education teachers and supporting staff | 4.35 | 0.89 | Agree |
| 4 | Maintenance of workshop, equipment and machines | 4.30 | 1.22 | Agree |
| 5 | Provision of education facilities | 4.25 | 1.13 | Agree |
| 6 | Budgeting and infrastructure planning | 4.24 | 0.95 | Agree |
| 7 | Funding of business education research | 4.20 | 0.91 | Agree |
| 8 | Training and re-training of staff | 4.20 | 0.94 | Agree |
| 9 | Procurement of season books and business education journals | 4.10 | 0.94 | Agree |
| 10 | Provision for running cost | 3.79 | 1.07 | Agree |

The data in Table 3 shows that a large number of the respondents agreed on the need for the funding of business education. This is evident because all items have a mean rating of more than 3.00.

**Research Question 2:** What are the constraints to effective funding of the business education programme in Nigeria?

Table 4
*Mean Responses on Constraints to Effective Funding of Business Education Programme in Nigeria*

| S/N | Items | Mean | SD | Decision |
|---|---|---|---|---|
| 1 | Lack of government commitment to business education programme | 4.01 | 1.04 | Agree |
| 2 | Poor orientation and students' attitudes toward practical works | 4.01 | 0.96 | Agree |
| 3 | Total dependence on government for funding | 3.99 | 1.05 | Agree |
| 4 | Lack of maintenance of business education facilities | 3.94 | 1.05 | Agree |
| 5 | Corruption | 3.94 | 1.03 | Agree |
| 6 | Diversion and misappropriation of funds | 3.93 | 1.14 | Agree |
| 7 | Poor supervision and lack of proper records | 3.88 | 1.13 | Agree |
| 8 | Lack of vision and commitment from teachers | 3.64 | 1.10 | Agree |
| 9 | Wastages | 3.64 | 1.09 | Agree |
| 10 | Lack of internal control | 3.71 | 1.05 | Agree |

The data presented in Table 4 show that all items could stand as constraints to effective funding of the business education programme in Nigeria. This can be inferred from respondents' responses which indicate a mean of more than 3.00 on all the items.

**Research Question 3:** Are the funds provided by different sources to run the business education programme in Nigeria inadequate?

Table 5
*Mean Responses on Inadequacy of Funds Provided for the Business Education Programme in Nigeria*

| S/N | Items | Mean | SD | Decision |
|---|---|---|---|---|
| 1 | Internal generated revenues (IGR) | 4.25 | 1.13 | Agree |
| 2 | Government agencies such as ETF, ITF, etc. | 4.10 | 0.93 | Agree |
| 3 | Grants from the government | 4.06 | 0.83 | Agree |
| 4 | Alumni association | 3.95 | 0.99 | Agree |
| 5 | Loan and advances from financial institutions | 3.94 | 1.03 | Agree |
| 6 | Industries and firms | 3.93 | 1.05 | Agree |
| 7 | External aids such as World Bank, UNDP, etc. | 3.88 | 1.02 | Agree |
| 8 | Special levies on students | 3.84 | 1.13 | Agree |
| 9 | Community resources as a source of funds | 3.80 | 0.87 | Agree |
| 10 | Philanthropists and other contributors | 3.70 | 0.97 | Agree |

The data presented in Table 5 shows that a large number of the respondents believe that the funds provided by different sources to run the business education programme in Nigeria is inadequate. This is clear from the response of the respondents which indicate a mean of more than 3.00 in all the items.

## Discussion

This study considered the various issues and challenges involved in the funding of business education in Nigeria. The results of the study revealed that to plan and effectively manage the business education programme in Nigeria, funding is required to develop suitable curriculum, recruit qualified teachers, provide necessary education facilities and fund education research. Akinola (as cited in Ogunribido, 2005) similarly lamented the funding situation of education in Nigeria, asserting that higher education institutions in the country are in dire need of money if they are to cater to both their capital and recurrent needs. Further, capital projects that began a few years ago cannot be completed due to lack of funds. Moreover, institutions of learning cannot produce self-reliant graduates when there is dearth of funds (Ogunribido, 2005). As Eze (2013) explained, education is an expensive social service that requires adequate financial provision from all tiers of government for successful implementation of the education programmes.

The result of the study also revealed that there are constraints to effective funding of business education in Nigeria. Ayeni (2006) found that among the factors hindering the effective funding of business education is the lack of proper technological orientation in our educational programme. He further suggests that funding left in the hands of the government, as well as the diversion and misappropriation of funds, inadequate records for materials and facilities allocated to the business education programme have been major obstacles. Enijuni and Aina (2008) further submitted that the funding of business education has been highly stringent and indeed topical. It is on this note that business education continues to be underfunded when considered in relation to the needed equipment and materials for effective planning. According to Akintonde (2008) the diversion of funds by the authorities, non-release of the total amount budgeted by the institution, and the lack of probity and accountability of the authorities affect funding of the business education programme.

Finally, the study revealed that the funds provided for the business education programme in Nigeria were not adequate. This finding supports Olaitan's findings (as cited in Ogunribido, 2005) who, commenting on the problems of funding business education, argued that business organizations should be lured into subsidizing vocational education – business

education inclusive. Further, the potential sources of funds for business education, such as private organizations and individuals, are not being explored and exploited. Enijuni and Aina (2008) proffered that it is no exaggeration that business education has not been adequately funded to produce competent manpower for the nation's companies and industries. According to these authors' research, this inadequacy has adversely affected the overall output of the nation's industrial sector as underprepared business education students graduate from our tertiary institutions and man business activities in the country. Ayeni (2006) further asserted that there are needs for adequate financing of the business education programme in Nigeria. These needs could include planning, monitoring, and effective management of the programme for the purpose of achieving the ultimate goals of business education. As Ayeni suggested, funds are needed for setting up committees who will develop curriculum to suit the programme, plan budgeting and infrastructure, provide equipment and facilities, and purchase tools and consumable goods.

## Conclusion

Business education is no doubt expensive and capital intensive. The government alone constitutes a major source of finance but these funds are grossly inadequate. The dearth of funds for the programme is a major barrier to ensuring the programme produces various opportunities, including self-reliance and economic development. It is therefore expedient that the various tiers of government and other relevant stakeholders assist business education with adequate facilities and needed funds for the proper implementation of the business education programme if the potentials of the programme are to be properly harnessed.

The major obstacles of inadequate record-keeping of materials and poor facilities allocation for business education further hinder the provision of equipment needed for the development and growth of manpower, skills and attitudes that can synergistically harness resources that will yield the satisfaction of the society.

## Recommendations

In order to reduce the problems associated with the inadequacy of funds for the running of the business education programme as shown in this study, the following recommendations are made:

- Accountability and probity should be entrenched in the funds disbursed for the business education programme.
- Other sources outside government should be explored as potential sources for funds.
- The government should make adequate provisions to finance business education.
- Private financing of business education should be encouraged.
- Students' enrolment for business education programmes should be commensurate with facilities so as not to overstretch available resources.

## References

Adeosun O. A., & Ogunribido O. R. (2014). Funding and adoption of ICT for effective teaching of business education: Colleges of education in South Western Nigeria experience. 3rd AFTRA Teaching and Learning in Africa Conference.

Akintonde O. G. (2008). Funding of business education for economic empowerment. *Journal of Business Educators of Nigeria*, (2)1.

Ayeni M. F. (2006). Financing vocational education in Nigeria. *Journal of Research in Vocational and Technical Education*, (2)2.

Enijuni A. T., & Aina M. A. (2008). Funding of business education for economic empowerment. *Journal of Business Educators of Nigeria*, (2)1.

Eze, O. (2013). Funding business education programme for qualitative business education in Nigeria. *ABEN Book of Readings*, (3)1.

Fasae, F. B. K., & Elemure C. B. (2008). Business education and promotion of private enterprises. *Journal of Business Educators of Nigeria*, (2)1.

Ogunribido O.R. (2005). Financing accounting education programmes: A case for making its products self-reliant. *Journal of Research in Vocational and Technical Education*, (2)1.

## Appendix A

*Questionnaire on Funding of Business (Office) Education in Nigeria: Opportunities and Implication*

Dear Sir/Madame:

This questionnaire is meant to elicit information on 'Funding of Business (Office) Education in Nigeria: Opportunities and Implication.' This study is strictly for research purposes and your genuine response to each of the items will be greatly appreciated.

Thank you.

Elemure C.B.

Name of Institution: _____

Department: _____

Sex: Male ☐ Female ☐

Instructions: In responding to the questionnaire items, please tick any of the options provided that correctly matches your opinion.

*Justifications for Funding of Business Education in Nigeria*

| S/N | Items | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | Planning, monitoring and effective management of the programme | | | | |
| 2 | Development of suitable curriculum | | | | |
| 3 | Budgeting and infrastructure planning | | | | |
| 4 | Recruitment of qualified business education teachers and supporting staff | | | | |
| 5 | Provision of education facilities | | | | |
| 6 | Procurement of season books and business education journals | | | | |
| 7 | Provision for running cost | | | | |
| 8 | Funding of business education research | | | | |
| 9 | Training and re-training of staff | | | | |
| 10 | Maintenance of workshop, equipment and machines | | | | |

*Constraints to Effective Funding of Business Education Programme in Nigeria*

| S/N | Items | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | Diversion and misappropriation of funds | | | | |
| 2 | Poor supervision and lack of proper records | | | | |
| 3 | Lack of vision and commitment from teachers | | | | |
| 4 | Total dependence on government for funding | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5 | Wastages | | | | |
| 6 | Corruption | | | | |
| 7 | Lack of internal control | | | | |
| 8 | Lack of maintenance of business education facilities | | | | |
| 9 | Lack of government commitment to business education programme | | | | |
| 10 | Poor orientation and students' attitudes toward practical works | | | | |

*Adequacy of Funds Provided for Business Education Programme in Nigeria*

| S/N | Items | VA | A | NA | GI |
|---|---|---|---|---|---|
| 1 | Grants from the government | | | | |
| 2 | Community resources as a source of funds | | | | |
| 3 | Philanthropists and other contributors | | | | |
| 4 | Government agencies such as ETF,ITF etc. | | | | |
| 5 | External aids such as World Bank, UNDP etc. | | | | |
| 6 | Industries and firms | | | | |
| 7 | Alumni Association | | | | |
| 8 | Special levies on students | | | | |
| 9 | Loan and advances from Financial Institutions | | | | |

## Authors

**Elemure V. Ehis**, Ph.D., majored in Educational Evaluation at University of Ibadan. She is an Assistant Director of Education with Lagos State Teaching Service Commission, Education District II Maryland Complex, Lagos State, Nigeria.

**Elemure Clement Boluwaji** is a Doctoral student at Leadcity University, Ibadan Nigeria. He is currently a lecturer in Office Management at the Federal Polytechnic Ado Ekiti, Nigeria.

# FROM GREECE TO NORWAY WITH USEFUL KNOWLEDGE

Anne Selvik Ask and Ingebjørg Aarek,
University of Agder, Kristiansand, Norway

**Abstract:** *There is a need for a more sustainable diet in many countries. Using Mediterranean principles could provide a possible answer. The principles of the Mediterranean diet and suitability to the Nordic diet have been discussed in courses mainly for Norwegian food and health teachers and students visiting Greece. What benefits do the participants experience after returning home and how do they apply their new knowledge in Norwegian conditions? We studied the themes from the exam papers to find out which knowledge the participants acquired from the course, and how they transferred their knowledge about the Mediterranean diet to Norwegian conditions. We also conducted a survey among the participants; they reported that they felt they benefited from the course. It seems the students are able to translate their knowledge about Mediterranean diet to Norwegian conditions, and the teachers who participated in the course used their knowledge in teaching. Most of the participants use this knowledge in their daily lives.*

**Key words:** Mediterranean diet, sustainable diet, course in specific location, useful experiences

## Background

The diets around the Mediterranean have one thing in common: they are largely based on plant food. Newer dietary recommendations, including the Norwegian Dietary Advice (NDA, 2011), advise us to eat a diet mainly based on plant foods. Although the NDA has not considered sustainability as a main factor, if we follow the recommendations, we are caring about our health and are at the same time more likely to eat a sustainable diet. According to the Food and Agricultural Organization (FAO) of the United Nations (Burlingame, 2010),

> *Sustainable Diets are those diets with low environmental impacts, which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.* (p. 7, italics in original)

A diet based on the principles of the Mediterranean diet and using local produce in season could be considered to be both healthy and sustainable.

Every year since 2006 the University of Agder has offered a course in Mediterranean diet for students and teachers in Food and Health (Home Economics). Over the years, about 175 teachers, students, nurses, health workers, and other interested persons have taken part in these courses. The course called *The Mediterranean Diet* has its roots in Lesvos, Greece, where the University of Agder has a course and study center in a restored monastery. Because of the course contents, we believe that the best place to teach such a course is in a Mediterranean country, preferably somewhere where the traditional diet has not completely disappeared. Therefore the course has been taught mainly in Lesvos. The course can give 10 credits in the European Credit Transfer System (ECTS). The participants can choose to write an exam paper after the course and get 10 ECTS as further education for teachers, but it is also possible

to follow the course without writing the exam paper.

In the course the participants learn about the original Mediterranean diet and its health effects (University of Agder, 2006). They are encouraged to find out what foods are available in the local stores, what is produced locally, and whether people grow/produce any food themselves. Part of the course is to get practical experience in preparing food with local produce based on the principles of the original Mediterranean diet. If possible, the participants visit someone in the local community who has a kitchen garden. Here they can get a better understanding of how the diet varies with the season, depending on what can be produced. Some decades back Greek salad was not eaten in winter because tomatoes could not be grown in the winter season, it was a summer food. Fava, a kind of lentil or pea purée, was regarded as winter food and therefore not served during the summer. The use of olives, olive oil, herbs, spices, vegetables, fruits, bread, wine, and dairy products like cheese and yoghurt are discussed. All of this introduces the participants to Mediterranean food culture and meals as a social arena in the Mediterranean area and gives them the background to compare a Mediterranean meal with a Norwegian meal, both when it comes to the food and as a social arena.

The evaluation of these courses has been positive, but we would like to know what knowledge the students have acquired in the course and whether they apply this knowledge after they return home. Our questions are: Is it useful to teach students about the Mediterranean diet in a Mediterranean country? What useable knowledge do students get from a course in the Mediterranean diet? How do students translate their knowledge about Mediterranean diet to Norwegian conditions?

## Theory

After World War II the Greek government was concerned about the living conditions of the population and saw the need to improve these conditions. They invited the Rockefeller Foundation to carry out a major epidemiological survey on the island of Crete to find out how best to raise the standard of living for the population. The epidemiologist Allbaugh (1953) carried out an investigation into the life of the population in Crete. Included in this study was a survey of the dietary characteristics of the members of one out of every 150 households on the island. The survey of the dietary characteristics showed that the population had a mainly vegetarian diet, with a lot of cereals, vegetables, fruits, and nuts and only small amounts of milk, meat, and fish. Olive oil and bread were part of every meal, and wine was consumed in moderate amounts. Wild herbs were also gathered and used. Although Allbaugh and the Rockefeller Foundation were the first to record the diet in Crete, Keys (1995) was the person who first showed an interest in the diet in southern Italy and Crete and its possible health effects. He noticed the very low rates of heart disease in the region, and together with colleagues, he started a series of investigations in seven countries into diet and other factors that could cause coronary disease.

There is not one specific Mediterranean diet but rather a collection of traditional eating habits common in countries bordering the Mediterranean Sea (Sofi, 2009). The dietary patterns in these countries vary considerably, but they all have some features in common. Like the diet of Crete in the 1950s, which has become the standard for the Mediterranean diet, these diets are characterized by abundant plant foods (i.e. fruits, vegetables, breads, cereals, potatoes, beans, nuts, and seeds). Fresh fruit is the typical daily dessert, and olive oil is the principal source of fat. Dairy products (principally cheese and yogurt)

and fish and poultry are consumed in low to moderate amounts; zero to four eggs are consumed weekly; red meat is consumed in low amounts; and wine, if consumed, is consumed in low to moderate amounts normally with meals. This diet is low in saturated fat (< or = 7-8% of energy) with total fat ranging from < 25% to > 35% of energy throughout the region (Willett et al., 1995).

Since the Seven Countries Study (see http://www.sevencountriesstudy.com), a large number of research projects have been carried out to find out more about the effect of adherence to the Mediterranean diet. Sofi, Cesari, Abbate, Gesini, and Casini (2008) published a meta-analysis of 12 studies. In their conclusion they say

> This meta-analysis shows that adherence to a Mediterranean diet can significantly decrease the risk of overall mortality, mortality from cardiovascular diseases, incidence of or mortality from cancer, and incidence of Parkinson´s disease and Alzheimer´s disease. (p. 6)

Bere and Brug (2010) discussed whether the term *Mediterranean diet* is a misnomer. They looked at the 12 studies in Sofi et al.'s (2008) meta-analysis and commented that only four of the 12 studies were carried out in Mediterranean countries. Of the rest, six were from the United States, one from Australia, and one from Sweden; therefore, the majority of participants in the studies included in the meta-analysis came from non-Mediterranean populations. Also, all the studies used a score for adherence to Mediterranean diet that was first presented by Trichopolou et al. (1995). Although the original Trichopolou et al. study took place in Greece, these subsequent studies did not; hence, in the subsequent studies, common foods were divided into different food groups, and the participants in the studies are given points according to what they eat. The food groups were general and were not for Mediterranean foods in particular. When points were given for eating fruits or vegetables, the actual food eaten may be very different in Crete and Sweden. The diets used in the surveys were based on the traditional eating pattern in the Mediterranean area in the 1950s and 60s. Local foods with similar nutritional content to the foods eaten in the Mediterranean area were used in the studies. Bere and Brug (2010) pointed out that there were many reasons, both cultural and environmental, to promote regional diets with locally produced foods based on the principles of the Mediterranean diet, rather than a diet based on specific Mediterranean foods.

## Method and Analytical Strategy

Since 2006 the University of Agder has presented a total of nine courses in Mediterranean diet: eight on the island of Lesvos and one in Tuscany, Italy. After each course, the students have been asked to evaluate the course. Most of the evaluations have been very positive. However, more information was needed to answer our question: What useable knowledge do students get from a course in the Mediterranean diet in a Mediterranean country?

We have three sources of data. The first is the post-course evaluation forms from all participants. On the last day of the course the students were asked to anonymously answer in writing four open-ended questions:

1. How did you get information of the course?
2. What did you especially like about the course?
3. What can be done to improve the course?
4. Other comments?

Asking the student to evaluate the course on the last day, we ensured 100% response rate. The students were not given the possibility to discuss their answers. We summarized the answers from all

evaluations to get the main opinion of the students.

Secondly, we studied the topics that the students chose for their exam paper. The exam paper can be written individually or by 2-3 people together. So far 72 people have written 54 exam papers. They have all been included in the results. The students were free to choose their own topic for the exam paper, as long as it had some connection to the course content (University of Agder, 2006). In the evaluation of the course, they remarked that it was inspiring to be allowed to write about a theme of one's own choice. The themes have been grouped into six categories. The themes were quite varied:

1. Comparative studies
2. Commodities used in Mediterranean cooking
3. Lifestyle diseases
4. Teaching
5. Changing attitudes
6. Other

Because the authors have been responsible for all nine courses, we were able to include all topics for the exam papers.

The third source of data is a questionnaire with questions relevant to our research sent by email to all 175 participants from 2006-2014. The questionnaire had 10 questions: eight structured and two open-ended. The first four questions were about the background of the participants and why they chose to do the course. The next four were about the contents of the course and what use it is for them today. The last two questions were open-ended, and the participants were asked to express what they liked about the course and what could be done to improve it. These two questions coincide with two questions in the course evaluation. These questions were asked to see if they still felt the same about the course after one or more years. Unfortunately the response rate for the survey was very low (22 %). The reason for the low response may be that for some it was several years since they did the course. Due to the limited response, we have only quoted the most common answers.

## Results and Discussion

The evaluations told us that the courses were interesting and varied and different from other courses in the university. Cooking with a local cook and learning how the same ingredients were used for many different dishes are mentioned as positive experiences. The participants also commented that it was inspiring to experience the food and culture of a different country. The course renewed the inspiration for teaching food and health and working with health promotion. The evaluations show that we have reached the aim of the course (University of Agder, 2006).

Most of the participants who answered the questionnaire were teachers (60%). The rest were students (20%) and people from other walks of life (20%) who were interested in doing the course. The teachers answered that they use their knowledge in their teaching, their daily life, and in social connections. The rest of participants who answered said that they use it in their daily lives. Teacher training students say that they want to use their knowledge when they start teaching. The participants found the course useful and feel that they have benefitted from the course both professionally and personally. In connection with answering the questionnaire, they commented that they have become more aware of their own diet: both when it comes to sustainability and their own health. They have changed their diet to include more locally produced foods, more vegetables and fruit, and they use oil when cooking instead of the traditional Norwegian margarine and butter. This response is in line with the Mediterranean diet and also the Norwegian Dietary Advice (Bere & Brug, 2010). Many of the participants are in charge of the food

for their families. This means that when they want to change their own diet, the diet for the family changes, too. When entertaining, they serve healthier food to their friends.

As stated above, the themes for the exam were grouped into six categories. The 54 papers were categorized as follows:

1. Comparative studies: 18 papers (e.g. *The Diet in Greece and Norway* and *Meals in Greece and Norway*).
2. Commodities used in Mediterranean cooking: 7 papers (e.g. olive oil, tomatoes, beans and lentils).
3. Lifestyle diseases: 10 papers (e.g. overweight and diabetes 2).
4. Learning Resources: 8 papers (e.g. theoretical and practical lectures about the Mediterranean diet for use in Norwegian schools).
5. Changing attitudes: 5 papers (e.g. more fruit and vegetables in the Norwegian diet).
6. Other: 6 papers (e.g. *The Attitude to Time in Greece and Norway*).

From the exam papers we see that some of the participants have been their own guinea pig– experimenting on him- or herself. Of course, these experiments were not scientific, but they systematically collected data and found answers to something they wondered about. One person cooperated with her doctor to see if it was possible to lose weight on a diet inspired by the Mediterranean diet. She was successful, but she might just as well have lost weight on a different diet. Another participant who never ate fish realized that it is important to eat fish, so she wanted to find out whether she was able to make herself like fish by preparing it in new and different ways. She reported that she had overcome her strong dislike for fish and had started to eat it.

Students showed that they were able to translate their knowledge about the benefits of a Mediterranean diet to Norwegian conditions and to integrate their new knowledge in their work. The teachers and teacher-students were reminded about other ways of teaching. During the practical cooking lessons in Greece, the teacher sat at the table with the participants, and everybody did the same thing together at the same time, a kind of apprenticeship learning. In this situation, it was easy for the teacher to see if anybody was experiencing problems, and everybody felt included. Many of the teachers commented that they would use this way of teaching more in their practical lessons.

In her exam paper, one participant wrote about an experiment that she conducted with male inmates in the prison where she works. A group of inmates was allowed to take part in preparing their lunch based on the principles of the Mediterranean diet. After a few small initial problems, the inmates enjoyed preparing their own lunch: they ate more fruit and vegetables and foods that were unknown to them that they probably would never choose to eat otherwise. The prison guards reported fewer squabbles between the inmates during the experiment. After the experiment was over, the inmates asked for it to be continued.

Nurses and health workers who participated in the course reported that they spend more time talking to mothers about the importance of giving their children more fruits and vegetables and using the local produce in season like they do in the Mediterranean countries. According to Sofi et al. (2008), the adherence to a Mediterranean diet can significantly decrease the risk of certain diseases.

A visit to a women's cooperative during the course, where they made jams and other products from local produce, inspired some of the participants to do something similar at home. Some participants produced rosehip purée from wild roses, green tomato jam and chutney from tomatoes that would have been thrown away at the end of

the season. They also designed the labels for the products and pamphlets to promote them. In this way they showed that they were able to use local products in a sustainable way (FAO, 2010).

Having been exposed to a new and somewhat different culture, one participant reflected on how it must feel like to come as a refugee to a new country and new culture. She contacted the local refugee center and invited a group of refugee women from different countries to come to her home and cook food and eat together. It was a great experience both for the women and for our participant. The women did not know one another or have a common language, but gradually they opened up, managed to tell their stories to one another, and did not want to leave. In the Mediterranean area meals are important meeting places for families and friends. Eating together is a social occasion. The course participants observed and experienced this during the course (University of Agder, 2006).

It seems that the course participants have come home with new knowledge and inspiration, and they have used it in many different ways.

## Conclusion

The Mediterranean countries have one thing in common: they border the Mediterranean Sea. Apart from that, they vary in religion, culture, ethnicity, economy, political status, and food supply. Consequently, the diet varies from place to place and country to country (Kiple & Ornelas, 2000). It has been difficult to find a common denominator for all the countries, but several of them seem to have in common the use of locally produced foodstuffs, like vegetables and olive oil. Our research shows that participating in a course on Mediterranean food in a Mediterranean country has given the participants a better understanding of the food and culture of the part of the region where the course was held, an understanding of the variations in the diets in different Mediterranean countries, and that the diet in Crete in the 1950-60s has been defined as *The Mediterranean Diet*. They have gained an understanding of the health benefits of this diet. In the evaluations the participants commented that they got renewed inspiration for teaching food and health.

From the survey we see that the teachers used their knowledge in teaching food and health. Most of the participants also used their knowledge in their daily life and in social occasions.

For the written exam, the students were allowed to choose their own theme. The themes varied from the benefit of the Mediterranean diet in lifestyle diseases to commodities used in Mediterranean cooking, comparison of the diet in Greece and Norway, and preparing (and trying out) lectures in food and health for use in Norwegian schools. In the papers, the students showed that they are able to translate their knowledge about the benefits of a Mediterranean diet to Norwegian conditions.

## References

Allbaugh, L. G. (1953). *Crete: A case study of an underdeveloped area*. Princeton, NJ: University Press.

Bere, E., & Brug, J. (2010). Short communication: Is the term “Mediterranean diet” a misnomer?. *Public Health Nutrition, 13*(12), 2127–2129. doi:10.1017/S1368980010000480

Burlingame, B. (2010). Preface. In B. Burlingame, & S. Dernini (Eds.), *Sustainable Diets and Biodiversity Directions and Solutions for Policy, Research and Action* (pp. 7–8). Retrieved from http://www.fao.org/docrep/016/i3004e/i3004e.pdf.

Food and Agriculture Organization [FAO] (2010, November). *Sustainable diets and biodiversity directions and solutions for policy, research and action.* Proceedings of the International Scientific Symposium on Biodiversity and Sustainable Diets United Against Hunger, Rome, Italy. Retrieved from http://www.fao.org/docrep/016/i3004e/i3004e.pdf.

Keys, A. (1995). The Mediterranean diet and public health: Personal reflections. *The American Journal of Clinical Nutrition, 61*(6), 1321S–1323S.

Kiple, K. E., & Ornelas, K. C. (Eds.). (2000). The history and culture of food and drink in Europe. In *The Cambridge world history of food* (Vol. 1, pp. 1193–1203). Cambridge, UK: Cambridge University Press

Nasjonalt råd for ernæring. (2011). *Kostråd for å fremme folkehelsen og forebygge kroniske sykdommer. Metodologi og vitenskapelig kunnskapsgrunnlag.* (in Norwegian). http://fido.nrk.no/5070725ea6c90cbb7d02b12dd53955b754904a13a5ba80e83464533b457f8e0f/Kosthold.pdf.

Sofi, F. (2009). The Mediterranean diet revisited: Evidence of its effectiveness grows. *Current Opinion in Cardiology, 24*(5), 442–446. doi: 10.1097/HCO.0b013e32832f056e

Sofi, F., Cesari, F., Abbate, R., Gesini, G. F., Casini, A. (2008). Adherence to Mediterranean diet and health status: Meta-analysis. *The BMJ, 337*, 1–7. doi:10.1136/bmj.a1344. Retrieved from http://www.bmj.com/content/bmj/337/bmj.a1344.full.pdf

Trichopolou, A., Kouris-Blazos, A., Wahlqvist, M. L., Gnardellis, C., Lagiou, P., Polychronopoulos, E. ...Trichopoulos, D. (1995). Diet and survival in elderly people. *The BMJ, 311*, 1457–1460.

University of Agder. (2006). *ECTS Course Catalog*. http://www.uia.no/en/studieplaner/topic/ERN900.

Willett, W. C., Sacks, F., Trichopoulou, A., Drescher, G., Ferro-Luzzi, A., Helsing, E., & Trichopoulous, D. (1995). Mediterranean diet pyramid: A cultural model for healthy eating**.** *American Journal of Clinical Nutrition, 61*(6), 1402S–1406S.

## Authors

**Anne Selvik Ask** is an Associate Professor and **Ingebjørg Aarek** is an Assistant Professor, Emerita at the University of Agder. Both work with Food and Health (Home Economics), sustainability, and entrepreneurship in teacher education. They have developed a course in the Mediterranean diet for teachers and health workers. The course is offered in a Mediterranean country.

# CULTIVATING EFFECTIVE PEDAGOGICAL SKILLS IN IN-SERVICE TEACHERS: THE ROLE OF SOME TEACHER VARIABLES

Mosunmola A. Amusan
Federal College of Education, Abeokuta, Ogun State, Nigeria

**Abstract:** *Researchers have opined that pedagogical skill of the teacher is a powerful force. This study investigated variables that are required to cultivate effective pedagogical skills for teaching basic science and technology (BST) in Ogun State Primary Schools in Nigeria. A survey research design was adopted. A total of 148 teachers across the state were sampled. Three instruments were used: (a) Teachers' Time Management Observational Scale (r=0.81); (b) Teachers' BST Content Knowledge Test (r=0.96); (c) Teachers' Pedagogical Skills Observational Schedule (r=0.84). There was no significant difference between the original and the reproduced correlation coefficients. All the teacher variables had significant total effects on teachers' pedagogical skills.*

**Keywords**: basic education, pedagogical skills, teacher variables, instructional time, content knowledge, subject specialization

## Introduction

The worth and potentialities of a country get evaluated in and through the work of the teacher. Gbagi (2011) blamed teachers for poor performance of candidates in public examinations in the country, noting that teachers are not doing enough to educate their students. Ayedun (2011) in line with Gbagi asserted that learners' failures are essentially the teachers' fault. Olukoya (2011), however, argued that the learners' failures were not their teachers' fault. He added that the performance of a candidate in any examination was a function of many factors: school, home, teacher, learners, government etc., and it is the totality of everybody's contribution. Teachers are just often the obvious scapegoat in a situation where a learner is underperforming because they are the visible faces of education. Teachers then need to be determined to seek better ways of educating the learners in schools in spite of all other impediments. There should be ways the teachers can go about improving the educational process and thereby enhance the success of the pupils' learning experience. Some teacher variables which could affect their pedagogical skills in teaching basic science and technology (BST) were examined in this study.

Owoeye (2000) opined that school location has a significant effect on the academic performance of the pupils. According to Reeves and Bylund (2005) students in rural schools perform less well than their urban counterparts. This result however contradicts some findings which noted that school location has no significant effect on the academic performance of pupils (Onah & Ugwu 2010; Yussuf & Adigun 2010). Research has not provided clear evidence that rural schools are inferior to urban schools.

In many primary schools, each class has a teacher who stays with them for most of the week and will teach them the whole curriculum; teachers are expected to have knowledge for multiple disciplines. According to Darling-Hammond (2000), a specific teacher characteristic such as academic major is associated with increased gains in student achievement. Goldhaber and Brewer (2000) also found that students with teachers possessing degrees in mathematics had greater gains in achievement than students with teachers

with non-mathematics degrees, but found no such results for science.

Instructional time is one of the most challenging constraints teachers face in trying to achieve curricular goals. Quality teachers need to know how to use class time effectively. Use of time can be optimized in the classroom by careful planning. There is a relationship between the amount of time pupils are actively engaged in learning activities and their achievement (Mastropieri & Scruggs, 2000). The ability of teachers to organize, manage, and spend quality portions of the allocated time for instruction may therefore affect the achievement of the pupils. Most teachers schedule and allocate the appropriate amount of time for learning, but few teachers actually ensure that their pupils are engaged and actively occupied with activities geared towards the learning of the subject during the allocated time.

In agreement with Shulman (1987), quality teachers would possess the following: content knowledge, which is the teachers' content background in the subject they teach, and pedagogical skills, which embrace the principles and strategies of classroom management and organization. Content pedagogy refers to the pedagogical (teaching) skills teachers use to impart the specialized knowledge/content of their subject area(s). Pedagogy is when the teacher selects strategies to match pupils' needs. Effective teachers display a wide range of skills and abilities that lead to creating a good learning environment. Knowledge of content must be balanced with a solid grounding in effective teaching strategies. Teachers should use a wide variety of instructional methods, experiences, assignments, and materials to ensure that learners are achieving all sorts of cognitive objectives (Eby as cited in Okpala & Ellis, 2005). While researchers tend to agree that teachers' pedagogical skills are important determining factors in influencing learners' outcomes, there is little consensus about the relationship between specific teacher attributes and teachers' effective pedagogical skills.

## Statement of the Problem

The prevailing low performances in external examinations over time have been known to evolve from poor or ineffective pedagogical skills employed by teachers. Even though stakeholders in education had made efforts to improve the quality of science in terms of content delivery by retraining the teachers through various workshops and seminars, there has yet been no remarkable improvement in the learners' performance.

A number of researchers have argued that teachers' pedagogical skills are powerful predictors of learners' performance; however, researchers have not been able to conclusively and consistently agree on the specific teacher attributes that influence the effectiveness of their pedagogical skills. This study, therefore, sought to provide a causal explanation of the effectiveness of teachers' pedagogical skills in terms of teacher variables, such as, school location, subject specialization, instructional time, and content knowledge.

## Research Questions

The following research questions guided the study:

1. What is the pattern of relationships (cor relations) in the model?
2. Is the model describing the causal effec ts among the variables consistent with t he observed correlations among these v ariables?
3. If the model is consistent, what are the estimated direct, indirect, and total caus al effects among the variables?
4. What is the relative importance of each exogenous and endogenous variable on teachers' pedagogical skills?

## Research Design

The study employed a non-experimental, survey design. Correlations among the variables of study were assessed testing theoretical propositions about cause and effect without manipulating variables.

### Population, Sampling Technique, and Participants

The study population was the 14,751 public primary school teachers in the twenty local government areas of Ogun State, Nigeria. Multi-stage sampling method was used to get the required respondents for this study. Proportionate to size and stratified sampling techniques were used to obtain the sample. A total of 148 BST teachers spread all over the state were participants in the study.

### Instrumentation

The study made use of three validated instruments:

a. BST Teachers' Management of Time Observational System adapted by the researcher to estimate the proportion of the subjects' scheduled time spent on facilitating knowledge in BST by the teachers. Content validity and reliability of this instrument determined using Lawshe's method and Scott pi gave 0.77 and 0.81 respectively.
b. BST Teachers' Content Knowledge Test, a forty-item instrument drawn from the BST curriculum by the researcher to test the teachers' BST content knowledge. Content validity and reliability of this instrument determined using Lawshe's method and Kuder Richardson 20 (KR-20) because of the dichotomous scoring, gave 0.74 and 0.96 respectively.
c. Pedagogical Skills Observational Schedule adopted by the researcher has four sections to rate teachers' behaviours in the BST classroom, on items such as, lesson plans, presentation of lessons, and class management/ control among others. Content validity and reliability of this instrument determined using Lawshe's method and Scott pi gave 0.73 and 0.84 respectively.

### Data Collection Procedure

Both observation instruments were used by the researcher and one research assistant on each of the 148 BST teachers in one BST lesson. Audio-video recording of the lesson also went on at the same time. Finally, the BST Teachers' Content Knowledge Test was administered on the teachers.

## Results

The research questions were answered using multiple regression and path analysis. Table 1 reveals high significant relationships among the variables ($p<.05$). The highest correlation ($r = 0.735$) is between instructional time and pedagogical skills. The different variables as listed on the table are as follows: $Z_1$ = school location; $Z_2$ = teachers' subject specialization; $Z_3$ = instructional time; $Z_4$ = teachers' BST content knowledge; and $Z_5$ = teachers' pedagogical skills.

Table 1
*The Original and Reproduced Correlation Matrix for the Five Variables*

| Variables | $Z_1$ | $Z_2$ | $Z_3$ | $Z_4$ | $Z_5$ |
|---|---|---|---|---|---|
| $Z_1$ | 1.00 | .080 | .126 | .046 | .159 |
| $Z_2$ | .080 | 1.00 | .048 | -.052 | .222 |
| $Z_3$ | .134 | .048 | 1.00 | .197 | .735 |
| $Z_4$ | .034 | -.030 | .197 | 1.00 | .259 |
| $Z_5$ | .065 | .222 | .734 | .259 | 1.00 |

Of the eleven paths, nine with values higher than 0.05 were retained. Only in two cases did the values fall below the criterion. This accounted for 22% below the 40% criterion level. This implies that the hypothesised model fits the empirical data. Therefore, the obtained model is consistent with the observed correlations.

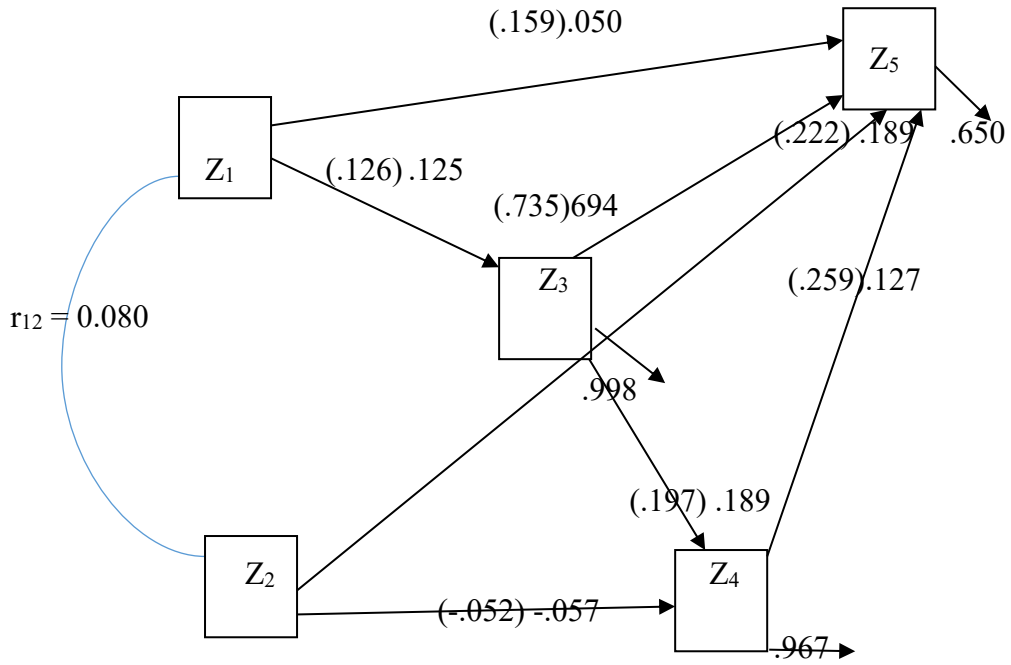


*Figure 1.* Re-specified (parsimonious) path model of the 5 variable system.

For teachers' pedagogical skills, the primary determinants were school location, subject specialization, instructional time, and content knowledge with adjusted R = .578. This model explained approximately 57.8% of the variances in pedagogical skills. The direct effect, indirect effect and total effect of each independent variable on the criterion variable pedagogical skills are shown in Table 2. It follows therefore that in the model in which pedagogical skill was the criterion variable, instructional time was the most important, followed by subject specialization; school location and teachers' content knowledge.

Table 2
*Summary of Causal Effect for Re-specified Model (Pedagogical Skills)*

| Outcome | Determinants | Effects | | Total |
|---|---|---|---|---|
| | | Direct | Indirect | |
| Pedagogical Skills ($Z_5$) | School location ($Z_1$) | .050 | .090 | .140 |
| | Subject Specialization ($Z_2$) | .189 | -.007 | .182 |
| | Instructional time ($Z_3$) | .694 | .024 | .718 |
| Adj $R^2$ = .578 | Content knowledge ($Z_4$) | .127 | -- | .127 |

## Discussion

This study found a significant direct effect of school location on effective use of instructional time. This finding is in agreement with the opinion of Howley, Howley, and Shamblen (2001) that compared to their colleagues in urban located schools, their rides to and from their schools tended to be more arduous. According to Amusan (2014) many teachers were not usually on grounds in rurally located schools, and many students come in very late for their classes.

The findings of this study points to the fact that the teachers' subject specialization had just a slight significant effect on teachers' BST content knowledge. This is not in agreement with the findings of Wayne and Youngs (2003) or Schwartz and Gess-Newsome (2008) who opined that science specialists typically have greater science content background, perhaps even holding a degree in a science area and specializing in science teaching. The study's findings however agree with those of Abuseji, (2007) who found little or no significant relationship between teacher qualification and pupils' achievement.

The study revealed that teachers' effective use of instructional time had influence on their BST content knowledge. This is in agreement with Okpala and Ellis (2005) who emphasized that lack of content knowledge is an inhibition to effective instruction. The primary teachers made poor use of the instructional time because their BST content knowledge was low.

Of the four variables predicting teachers' pedagogical skills, school location, subject specialization, and instructional time had both direct and indirect effects while content knowledge had only direct effect on pedagogical skills. This study found significant direct effect of school location on pedagogical skills. Moulton (2001) noted that in many school locations instructional materials were not available. Amusan (2014) also observed that learning aids were absent in many schools; however, improvisation was done in some urban schools, probably because they are closer to the inspectorates.

BST teachers' subject specialization has a significant effect on teachers' pedagogical skills. Science specialists are more likely to know and apply different science-related pedagogical skills in the teaching of BST. This finding agrees with Schwartz and Gess-Newsome (2008) who noted that those schools with specialists seem to have a more consistent use of the science curriculum and a better understanding of what inquiry-based science looks like; therefore, their students are exposed to a greater amount of effective pedagogical skills. Amusan (2014) opined that teachers who had their specialties in the science and technology based courses displayed better topic-related pedagogical skills.

Effective use of instructional time had high predictive effect on teachers' pedagogical skills. Teachers who had proper plans for their BST classes were found to make more effective use of the class instructional time (Amusan, 2014).

The study also revealed a significant relationship between teachers' content knowledge and pedagogical skills. Teachers' BST content knowledge has effect on their application of good pedagogical skills in the classroom. Appleton and Harrison (2001) also opined that teachers' limited subject content knowledge does manifest itself as limited pedagogical skills. Amusan (2014) discovered that teachers who had poor BST content knowledge did actually have poor pedagogical skills. The low content knowledge of the BST teachers manifested itself in the poor pedagogical skills of the teachers, quite a few teachers even taught wrong content.

## Recommendations

The following recommendations are made

a. Teachers should use the classroom instr uction time effectively for academic wo rk.
b. Educational stakeholders should endea vor to train in and expose teachers to th e use of different and relevant teaching methods in science.
c. Government should endeavor to provid e enabling school environment that cou ld allow for near uniformity in the perf ormance of teachers across rural and ur ban locations.
d. Teachers should be encouraged to com e to BST classes better prepared to teac h. This would redirect the classes from the present teacher-oriented classroom t o pupil-oriented ones.

This study should serve to encourage some other researchers to look into other variables which could influence pedagogical skills in teaching basic science and technology on one hand and others which could affect learners' performance in BST. More still needs to be done in form of research to improve the performances of learners in the fields of science.

## References

Abuseji, F. A. (2007). Student and teacher related variables as determinants of secondary school students' academic achievement in chemistry. *Journal Pendidikan, 32*(2007), 3–18.

Amusan, M. A. (2014). *Instructional time, teacher quality and subject specialization as determinants of pupils' achievement in basic science and technology in Ogun State primary schools* (Unpublished doctoral thesis). University of Ibadan, Ibadan, Nigeria.

Appleton, K., & Harrison, A. (2001, December). *Outcomes-based science units that enhance primary and secondary science teachers' PCK.* Paper presented at the Australian Association for Research in Education (AARE) Conference, Fremantle, Western Australia. Retrieved from http://www.aare.edu.au/data/publications/2001/app01127.pdf

Ayedun, B. (2011, February 14). Is the minister wrong to blame teachers for mass failure in Nigerian schools? *Daily Triumph.*

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Journal of Education Policy Analysis, 8*(1), 88–114.

Gbagi, K (2011, February 2). Is the minister wrong to blame teachers for mass failure in Nigerian schools? *The Tribune Newspapers.*

Goldhaber, D., & Brewer, D. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis, 22*(2), 129–146.

Howley, C., Howley, A., & Shamblen, S. (2001). Riding the school bus: A study of the rural versus suburban experience in five states. *Journal of Research in Rural Education, 17*(1), 41–61.

Mastropieri, M. A., & Scruggs, T. E. (2000). *The inclusive classroom: Strategies for effective instruction.* Columbus, OH: Merrill.

Moulton, J. (2001). Improving education in rural areas: Guidance for rural development specialists. Retrieved from http://tanzaniagateway.org/docs/Improving_education_in_rural_areas_guidance_for_rural_development.pdf

Okpala, C. O., & Ellis, R. (2005). The perceptions of college students on teacher quality: A focus on teacher qualifications. *Education, 126*(2), 374–383.

Olukoya, M. (2011, February 4). Is the minister wrong to blame teachers for mass failure in Nigerian achools? *SUN Newspaper.*

Onah, D. U., & Ugwu, E. I. (2010). Factors which predict performance in secondary school physics in Ebonyi north educational zone of Ebonyi State, Nigeria. *Advances in Applied Science Research, 1*(3), 255–258. Retrieved from http://pelagiaresearchlibrary.com/advances-in-applied-science/vol1-iss3/AASR-2010-1-3-255-258.pdf

Owoeye, J. S. (2000). *The effect of integration of location, facilities and class size on academic achievement of secondary school students in Ekiti State, Nigeria* (Unpublished doctoral thesis). University of Ibadan, Ibadan, Nigeria.

Reeves, E. B., & Bylund, R. A. (2005). Are rural schools inferior to urban schools? A multilevel analysis of school accountability trends in Kentucky. *Rural Sociology, 70*, 360–386. doi: 10.1526/0036011054831215

Schwartz, R. S., & Gess-Newsome, J. (2008). Elementary science specialists: A pilot study of current models and a call for participation in the research. *Science Educator, 17*(2), 19–30.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 15*(1), 1–21.

Wayne, A. J., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research, 73*(1), 89–122. doi: 10.3102/00346543073001089

Yussuf, M. A., & Adigun, J. T. (2010). The influence of school sex, location and type on students' academic performance. *International Journal of Educational Science, 2*(2), 81–85.

## Author

Mosunmola Adebunmi Amusan, Ph.D., is a lecturer at the Federal College of Education, Abeokuta, Ogun State, Nigeria. She holds a BSc (Hons.) Chemistry from the University of Lagos, master, and doctoral degrees in educational evaluation from University of Ibadan, Nigeria. She takes mathematics and science courses in the General Studies Department.

## PUBLICATION GUIDELINES

The journal (*JISTE*) publishes articles by members of the International Society for Teacher Education (ISfTE). Exceptions are made for a non-member who is a co-author with a member, or who is invited to write for a special issue of the journal, or for other special/specific reasons.

- Articles submitted to *JISTE* must be written in English, following manuscript guidelines (see below) and will be anonymously reviewed by referees. Each article must pass the review process to be accepted for publication. The editors will notify the senior author of the manuscript if it does not meet submission requirements.
- Articles are judged for (a) significance to the field of teacher education from a global perspective, (b) comprehensiveness of the literature review, (c) clarity of presentation, and (d) adequacy of evidence for conclusions. Research manuscripts are also evaluated for adequacy of the rationale and appropriateness of the design and analysis. Scholarly relevance is crucial. Be sure to evaluate your information. Articles should move beyond description to present inquiry, critical analysis, and provoke discussion.
- Articles pertaining to a particular country or world area should be authored by a teacher educator from that country or world area.
- All manuscripts accepted for publication will be edited to improve clarity, to conform to style, to correct grammar, and to fit available space. **Submission of the article is considered permission to edit to article.**
- The final decision to publish an article rests with the associate editor(s).
- Published manuscripts become the property of the *Society*. Permission to reproduce articles must be requested from the editors. The submission and subsequent acceptance of a manuscript for publication serves as the copyright waiver from the author(s).
- Writing and editorial style shall follow directions in the *Publication Manual of the American Psychological Association* (6th ed., 2009). References MUST follow the APA style manual. Information on the use of APA style may be obtained at www.apa.org.

### Manuscript Guidelines

- Manuscript length, including all references, tables, charts, or figures, should be 3,000 to 5,000 words. **Maximum length is 6,000 words.** Shorter pieces of 1500-3,000 words, such as policy review or critique papers are welcomed.

- All text should be double-spaced, with margins 1 inch (2.5 cm) all around and left justified only.

- Paragraphs should be indented using the "tab" key on the keyboard. No extra spacing should be between paragraphs.

- Tables, Figures, and Charts should be kept to a minimum (no more than 4 per article) and sized to fit between 5.5 x 8.5 inches or 14 x 20 cm.

- Abstract should be limited to 100-150 words.

- Include four or five keywords for database referencing; place immediately after the abstract.

- Cover page shall include the following information: Title of the manuscript; name(s) of author, institution(s), complete mailing address, email address, business and home (mobile) phone numbers, and fax number. Also on the cover page, please include a brief biographical sketch, background, and areas of specialisation for each author. Please do not exceed 30 words per author.

**Book and Other Media Review Submission**

Reviews of books or other educational media are welcome. Either the review or the item reviewed must be by a current member of ISfTE. Reviews must be no longer than 1000 words.

**Annotation of Recent Publications by Members Submission**

ISfTE members may submit an annotated reference to any book which they have published during the past three years. Annotation should be no longer than 150 words.

## SUBMISSION REQUIREMENTS

It is preferred that articles be submitted directly to the editor, Karen Bjerg Petersen at kp@edu.au.dk. To submit an article by email, send it as an attachment using MS Word, if at all possible.You may also submit by mail by sending the article on either a computer disk or flash drive. Storage items will not be returned.

**Manuscripts and editorial correspondence should be directed to:**

Dr. Karen Bjerg Petersen, Editor, *JISTE* Email: kp@edu.au.dk
Niels Juelsgarde 894, bygn 2110
8200 Århus, N.
University of Aarhus
Denmark

**Book Reviews should be directed to:**

Dr. Leanne Taylor, Associate Editor, *JISTE* Email: ltaylor3@brocku.ca
Brock University

### Future Issues and Submission Deadlines

**2016 (Volume 20, Number 2)**
**Submissions are no longer being accepted for this edition.** Some articles in this edition could have been submitted for the 20.1 edition of JISTE.
Deadline for submission has passed. Publication by December, 2016

**2017 (Volume 21, Number 1)**
***Theme –*** *Emancipating and Transforming Teacher Education for a Better Education System* was the theme was chosen by the conveners of the 37th seminar for ISfTE held at Kruger National Park in South Africa. For JISTE publication, participants (including those from the Distance Paper Group) are invited to revise their seminar papers, attending carefully to the manuscript and publication guidelines, and submit them to the journal for consideration. Book reviews on the theme are also invited.
***Deadline for Submission: August 1, 2016 – Publication by May, 2017***

**2017 (Volume 21, Number 2)**
***Currently an open submission with no specific theme*** – Members of ISfTE are invited to contribute manuscripts related to any important topic in teacher education. Members are encouraged to co-author articles with their students or colleagues who may not be members of ISfTE. Articles that explore teacher education issues such as the practicum, mentoring in other disciplines (e.g. nursing, adult education, social work education) are particularly invited. Such articles should explore the discourse in relationship to teaching at the elementary, secondary, or tertiary (college/university) level. Some articles in this edition could have been submitted for the 21.1 edition of JISTE.
***Deadline for Submission: April 1, 2017 – Publication by December, 2017***

## Front Cover

These institutions' logos appear on the front cover of this issue: Montclair State University along with its PRISM program sponsored the ISfTE seminar in 2015. The other three institutions – Aarhus University, Hong Kong Baptist University, and Weber State University – support JISTE with their on-going sponsorship. If other institutions would like to participate, please contact the journal's editor, Karen Berg Petersen.

**Montclair State University** is just across the Hudson River from Manhattan, New York City. Initiated in 1908, MSU began life as a two-year teacher training college with 8 faculty members, 187 students, and a first graduating class of 45 students. In 1924 the institution became Montclair State Teachers College and developed a four-year (Bachelors of Arts) program in pedagogy becoming the first US institute to do so. 1958 saw it merge with Panzer College to become Montclair State College and then a comprehensive multi-purpose institution in 1996. April 27, 1994, and in the same year the school became Montclair State University. It currently offers masters and some select doctoral degrees.

**Aarhus University** is the second oldest university in Denmark. It is also the largest university in the country with over 43,000 students. It offers programmes in both undergraduate and graduate studies. Although the main campus is in the city of Aarhus, Denmark, the university has small campuses in Copenhagen and Herning.

**Hong Kong Baptist University** was founded by the Baptist Convention of Hong Kong in 1956 as a post-secondary college and became a fully-fledged university in 1994. It now boasts eight faculties and schools and an academy offering a wide range of undergraduate and postgraduate programmes to around 8,400 students.

**Weber State University** in Ogden, Utah, United States, was founded in 1889. It is a coeducational, publicly supported university offering professional, liberal arts, and technical certificates, as well as associate, bachelor's, and master's degrees. Currently, over 25,000 students attend the university.