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Competence in Expanded Core Curriculum Skills: Does the Level Taught Matter to the Visually Impaired?

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Authors' contributions

This work was carried out in collaboration between both authors. Author EKN designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author EKG managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Educating the visually impaired requires unique consideration in which they would be provided with the tools, skills, and strategies they need to develop alternative means of obtaining information. The alternative means are compensatory access, sensory efficiency, assistive technology, orientation and mobility, independent living, social interaction, recreation and leisure career education and self-determination skills. The study sought to investigate the expanded core curriculum skills for students with visual impairment. It compares the level at which these skills were acquired and how they influence their competence. The researchers employed descriptive cross-sectional design for the study. 93 students with visual impairment were selected using multi-stage sampling technique from University of Cape Coast and University of Education, Winneba for the study. Frequency and percentages and ANOVA were used to analyse the data to answer the research questions and the hypothesis respectively. The results of the study indicated that majority of the students with visual impairment started the study of the expanded core curriculum skills from the basic level of education. It also became clear that those who started the learning of the expanded core curriculum at the basic level proved to be very competent. It was recommended that the Special Education

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Division of Ghana Education Service should intensify the teaching and learning of expanded core curriculum skills at the basic school so as to continue to impact ECC competence throughout a child's academic life.

Keywords: Expanded core curriculum; visual impairment; education; competence; skills.

1. INTRODUCTION

The alternative means through which students with impaired vision need in order to have access to the general curriculum is through the expanded core curriculum (ECC). The ECC is a body of knowledge and skills that the visually impaired need to have access to and the mastery of which is essential for successful functioning in life. The expanded core curriculum (ECC) is used to define concepts and skills that are typically learned incidentally by sighted students. The presence of visual impairment requires that these skills be thoroughly evaluated and systematically taught by teachers with specialised expertise [1].

Accessing the mandatory core curriculum is problematic for students with visual impairment. Therefore, it is essential for students who are visually impaired develop competence in the expanded core curriculum in order to live independently, have appropriate career opportunities, live rewarding, dignifying and fulfilling lives. Students with visual impairment are expected to possess the skills of the expanded core curriculum before entering any tertiary institution so as to cope with all educational activities including academic achievement.

Jacobson [2] asserted that it is difficult to expect that a person who is congenitally visually impaired could be entirely at ease and at home within the social, recreational, and vocational structure of the general community without mastering the elements of the ECC. Students who are congenitally visually impaired require specific instruction in skills such as orientation and mobility, social interaction, and independent living. Without the knowledge and skills of ECC, students with visual impairment are at high risk for more isolated lives [3; 4]. Accomplishments and joys such as shopping, dining, and attending and participating in recreational activities are a right, not a privilege, for persons who are visually impaired. Morelli, Folmer, Foley and Lieberman [5] considered responsibilities such as working, banking, taking care of health needs, and using public and private services are a part of a full life for everyone, including those who are visually impaired. Adoption and implementation of a core curriculum for students who are visually impaired will assure students have the opportunity to function more effectively and completely in the general community. The acquisition of ECC knowledge and skills will enable the visually impaired to be matured intellectually, physically, socially, emotionally, occupationally and morally for themselves, families and the nation at large. Shonkoff and Philips [6] are of the view that the ECC skills help the visually impaired to develop the knowledge, skills, and attitudes that influence their future behaviour and life choices.

Lohmeier [7] viewed historically; specialized schools for the blind were the only options for educational programming available to students with visual impairments. Throughout the 19th century and into the mid-20th century, the instruction in specialized schools consisted primarily of the core curriculum or academic areas Lohmeier (as cited in [8]). Current research suggested that specialized schools should provide instruction in both academic and specialized skill areas. The nine specialized skill areas identified within the ECC are compensatory academics, social development, recreation and leisure, independent living skills, orientation and mobility, technology, career education, self-determination, and visual efficiency Hatlen (as cited in [7]). Sighted individuals learn these life skills incidentally and through modeling, but students who are blind or visually impaired have little or no opportunity to acquire them through that kind of learning. The study examined whether specialized schools for students who are blind or visually impaired in the United States are including the eight areas of the expanded core curriculum in their instructional programs and whether they are doing it before, during, or after school hours.

Sapp and Hatlen [9] surveyed the views of teachers of students with visual impairments and O & M specialists of the ECC, all the participants responded to open-ended questions with positive comments about the importance of the ECC in the lives of their students. Most of them discussed how the skills in the ECC prepare

students for real life. Some went further, stating that when students master ECC skills, it is the difference between life and a successful life, and students who received high-quality instruction in the ECC have a richer quality of life than those who do not. Some participants were even more passionate about the importance of the ECC and stated that the ECC is everything and almost more important than academics. They went further to say that what point is there in reading/writing/math if you have no friends and can't get a job.

Current research supports the importance of the ECC and has investigated the current state of ECC instruction in the United States. Wolffe, Rosenblum, and Cleveland [10] citing the Council for Exceptional Children [11] included all the nine areas of the ECC in its list of the knowledge and skills that beginning teachers of students with visual impairments need. It included the skills and knowledge that have been validated by research as valuable for the education of children with disabilities, thus indicating that the larger educational community recognises that all areas of the ECC are important for students with visual impairments. The level at which the visually impaired should be taught all the knowledge and skills of the ECC has the bone of contention. The researchers were therefore motivated to explore the level at which it will be appropriate to teach the visually impaired the ECC and that can influence their competence.

1.1 Objectives of the Study

The following objectives were posed to guide the study:

1. The appropriate level of education to teach students with visual impairment the expanded core curriculum skills.
2. The level of education that the expanded curriculum taught actually affect the competence of the visually impaired students.

1.2 Research Question

The study was guided by one research question:

1. Which level are students with visual impairment taught expanded core curriculum skills?

1.3 Hypothesis

H_0: There is no statistically significant difference in the competence of visually impaired students in expended core curriculum based on the educational level at which they were taught.

H_1: There is a statistically significant difference in the competence of visually impaired students in expended core curriculum based on the educational level at which they were taught.

2. RESEARCH METHODS

Descriptive crosssectional survey design was used for the study. The target population for the study was the students with visual impairment of the University of Cape Coast (UCC) and the University of Education, Winneba (UEW), all in Ghana. The student population was 93, that is 63 from UEW and 30 from UCC. A multi-stage sampling procedure was used for the study. On the first stage, a purposive sampling procedure was used to select the two traditional public universities for education programmes (that is UCC and UEW) in Ghana to be used for the study. On the second stage, census, was used to involve all elements in the population. Census is feasible when the population is small [12].

A questionnaire for students with visual impairment was used to collect the data. The questionnaire was made up of 59 items which were close ended type. Further, the questionnaire was on a six-point Likert scale scored as; “Never” =0, “Rarely” =1, “Sometimes” =2, “Often” =3, “Very often” =4 and “Always” =5. The questionnaire was a multidimensional type with nine (9) sub-dimensions. The dimensions are Compensatory Access Skills, Sensory Efficiency Skills, Assistive Technology Skills, Orientation and Mobility Skills, Independent Living Skills, Social Interaction Skills, Recreation and Leisure Skills, Career Education Skills and Self-Determination Skills. The questionnaire was pilot-test to finetune the instrument. Cronbach’s Alpha (α) was computed to determine the reliability coefficient for each of the sub-dimension using the main data. Table 1 shows details of the reliability index for the dimensions of the instrument.

In all, the overall reliability coefficient for the entire scale is .84. Prior to the data collection exercise, in this research, several ethical issues were taken into consideration. The researchers through one on one interaction with the students with visually impaired sought for their consent for the data that would be taken from them. Again, the respondents were also assured of confidentiality and anonymity.

Table 1. Reliability coefficient for each of the dimensions

Dimensions of Scale	Reliability Coefficient (α)
Compensatory Access	.721
Sensory Efficiency	.734
Assistive Technology	.875
Orientation and Mobility	.771
Independent Living	.765
Social Interaction	.812
Recreation and Leisure	.796
Career Education	.697
Self-Determination	.703

Source: Field data, (2018)

The questionnaires were delivered by hand to the resource persons at the centres who were trained to administer the questionnaire to the students with visual impairment. Two working weeks interval was given for the questionnaire to be completed. After the two weeks, the researcher made a follow up to collect the answered questionnaire.

3. RESULTS AND DISCUSSION

Research Question: Which level are students with visual impairment taught expanded core curriculum skills?

The research question investigated the level at which students with visually impaired are often exposed to expanded core curriculum. Details of the information are shown in Table 2.

From Table 2, the majority of the respondents indicated that they were taught the ECC skills at the basic level (n=47, 50.6%). This was followed by the secondary level (n=27, 29.0%). Both Levels recorded the least count of (n=19, 20.4%). The statistics show that majority of the students with visual impairment that were taught, preferred the ECC to be maintained at the basic level of education. This explains why the ECC is seen as a catalyst to the education of the visually impaired. From the onset of their education, they have to be taught the ECC so that they can use the skills effectively as they climb up the educational ladder. In line with previous studies, Hatlen [13] and Koenig and Holbrook [14] had stated that in order to participate fully within the educational environment, students who are visually impaired require instruction in the ECC. The teaching of ECC should be in a continuum and should be taught from basic level through secondary to the tertiary for students with visual impairment to be competent.

3.1 Research Hypothesis

H_0: There is no statistically significant difference in the competence of visually impaired students in expanded core curriculum based on the educational level at which they were taught.

The research hypothesis sought to investigate whether differences exist in the mean scores of students with visually impaired regarding their competence in Expanded Core Curriculum based on the academic level (thus, Basic, Secondary or both) that they were taught. In order to get the differences, One-Way Analysis of Variance test was computed for all the dimensions of the nine Expanded Core Curriculum. Details of analysis are shown in Tables 3–10.

3.2 Compensatory Access Skills

To determine the influence of compensatory access skills at the various levels of education, one-way between-groups analysis of variance (ANOVA) was used for the analysis.

Table 2. Education level that respondents received instruction on expanded curriculum skills

Educational level	Freq.	Percent (%)
Basic	47	50.6
Secondary	27	29.0
Both Levels	19	20.4
Total	93	100.0

Source: Field Data, (2018)

Table 3. Summary of one-way Analysis of Variance (ANOVA)

Source	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	307.470	2	153.735	4.156*	.019	Reject null
Within Groups	3328.853	90	36.987			hypothesis
Total	3636.323	92				

*Source: Field Data (2018); *Significant difference exists at p≤0.05, n=93*

Table 4. Summary of one-way Analysis of Variance (ANOVA) on sensory efficiency skills

Sources	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	256.779	2	128.390	3.462*	.036	Reject null
Within Groups	3337.285	90	37.081			hypothesis
Total	3594.065	92				

*Source: Field Data (2018); *Significant difference exist at p≤0.05, n=93*

From Table 3, the results show that there were differences among the mean scores implying that compensatory skills learned differently influence the students' competence. For example, basic level recorded the highest mean and standard deviation (M=17.01, n=47, SD=6.153), both levels, (M= 16.15, n=19, SD=6.153) and secondary level (M=12.88, n=27, SD=5.946). It can be inferred from the results that there are statistical differences among the levels of contribution of compensatory skills learned to the overall competence of the students. The conclusion is that the more compensatory skills learned at the basic level the more competent the students become in the use of the skills for academic development.

Table 3, further shows the results of one way between-groups analysis of variance (ANOVA) is significant at *F* (2, 90) = 4.156, *p*<.05, Sig. =.019). To determine the direction of the difference a post-hoc test analysis was performed. The results [*F* (2, 90) = 4.156, *p*<.05, n=93, Sig. =.019] indicate that the difference lies between Basic and Secondary levels. Compensatory access skills learned at the basic level of education have an influence on their competence more than secondary level. If these skills were taught at both levels, then the influence on their competence would have been higher.

3.3 Sensory Efficiency Skills

Sensory efficiency skill is one of the ECC skills. To determine its influence on students' competence, ANOVA was used.

A one-way between-groups analysis of variance (ANOVA) was conducted to compare mean scores of the levels based on the sensory efficiency skills of students with visual impairment. From Table 4, the results show that there were statistically significant differences in its efficiency among the levels at which the student with visual impairment (*F* (2, 90) = 3.462*, p>.05, n=93, Sig. = .036). A post-hoc test was conducted to find the direction of the differences among the levels. Tukey's test was applied to find the direction of the differences in competence in sensory efficiency skills of students with visual impairment among levels. The findings indicate that the difference lies between the Basic and the Secondary levels. The results give statistical evidence to conclude that students with visual impairment who were more competent in sensory efficiency skills are taught at the basic level.

The findings support the claim that the use of the senses and movement for exploration are primary activities of learning at the stage of cognitive development. The development of cognitive concepts and skills laid the foundation for understanding. According to Langley [15], the ability to understand and make use of what is seen, heard, touched, smelled and tasted and to react appropriately to that information, is the foundation for development and learning. This demonstrates that the study of sensory efficiency skills by the visually impaired must fundamentally begin at the sensory-motor stage. The implication is that the environment in which children with visual impairment grow up must have adequate sensory inputs including, good auditory stimulation, language development and the provision of objects that will evaluate the cognitive development of the child with visual impairment. Again, multi-sensory approach to teaching must be emphasized when teaching children at the basic level. All learning including all the components of ECC depends on the

Table 5. Summary of one-way Analysis of Variance (ANOVA) on assistive technology

Source	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	135.246	2	67.62	3.336*	.040	Reject null hypothesis
Within Groups	1824.561	90	20.27			
Total	1959.806	92				

*Source: Field Data (2018); *Significant difference exists at p≤0.05, n=93*

efficient and effective use of the sensory system [16]. Efficiency and effective use of the non-visual senses is essential to the development of students with visual impairment [3].

3.4 Assistive Technology Skills

One-way between-groups analysis of variance (ANOVA) was conducted to compare mean scores of the levels based. The results show that there was a statistically significant difference among the levels with respect to assistive technology skills. The one-way between-groups analysis of variance (ANOVA) results of *F* (2, 90) = 3.336, p<.05, n=93, Sig. = .040). From the result, the obtained sig. value of .040 does not tell which of the levels associates well with the study of assistive technology skills by students with visual impairment. Hence, a post-hoc test/Fellow Up test was conducted to find which of the levels when assistive technology skills are taught will facilitate its competence.

The multiple comparisons (Post Hoc/ Follow-up test) using, Games-Howell test was conducted to find the differences in assistive technology skills of students with visual impairment among levels. According to Field [17], Games-Howell test as a post-hoc comparison is appropriate when the data do not meet the assumption of variance. Considering the Levene's test for this data, the assumption of homogeneity of variance was not met therefore Games-Howell test was conducted. From the Post Hoc test, the results indicate that the mean score between Basic Level and Secondary Level (M= -2.753, SR= 1.130, n=92, p<0.05, Sig. = .050) was significant.

This means that students with visual impairment at the secondary level can learn assistive technology skills better and become competent. However, between secondary and both level, the results show that there was no statistical significant difference (M= 1.159, SR= 1.602, n=92, p<0.05, Sig. = .751). The findings from the study give statistical evidence to the fact that students with visual impairment are better prepared to learn assistive technology skills (computer) at the secondary level.

The study of assistive technology is crucial in the education of the visually impaired. This is supported by the views of Koweru, Omoke and Orodho [18]. According to them, an assistive technology device is any item that is used to increase, maintain, or improve the functional capabilities of students with visual impairment. From the findings of these researchers, it can be concluded that assistive technology should be taught at the secondary level to the tertiary level for the acquisition of its competence.

3.5 Orientation and Mobility Skills

The researchers tested the level at which orientation and mobility skills are taught to students with visual impairment that would influence their competence. To realise this, one-way between-groups analysis of variance (ANOVA) was deemed appropriate for the study. The results are presented in Table 6.

Table 6 presents the one-way between-groups analysis of variance (ANOVA) which compares the mean scores of the levels at which students with visual impairment were taught orientation and mobility skills. From Table 6, the results show that there was a statistically significant difference among the levels with respect to orientation and mobility skills. The one-way between-groups analysis of variance (ANOVA) results of *F* (2, 90) = 3.719, p<.05, n=93, Sig. = .028) confirms that evidence. Due to the statistically significant difference identified by the one-way between-groups analysis of variance (ANOVA) represented by p=.028, Games-Howell post-hoc test was conducted.

The post–hoc test results show that there were no statistically significant differences among some of the levels even though the overall one-way between-groups analysis of variance (ANOVA) result (p=.028) show a statistically significant difference. However, between basic and secondary level, the result was statistically significant. The conclusion, therefore, is that it is good and better to teach the students with visual impairment at the basic level orientation and mobility skills since they are likely to be competent at that level than all the other levels.

. **Table 6. Summary of one-way (ANOVA) results on orientation and mobility skills**

Source	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	151.510	2	75.755	3.719*	.028	Reject null hypothesis
Within Groups	1833.156	90	20.368			
Total	1984.667	92				

*Source: Field Data (2018); *Significant difference exists at P≤0.05, n=93*

Table 7. Summary of one-way (ANOVA) results on independent living skills

Source	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	2833.891	2	1416.945	2.285	.108	Failed to reject the
Within Groups	55802.066	90	620.023			null hypothesis
Total	58635.957	92				

*Source: Field Data (2018); *Significant difference exist at p≤0.05, n=93*

Table 8. Summary of one-way (ANOVA) results on social interaction skill competence against the levels taught

Sources	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	3998.052	2	1999.026	3.460*	.036	Reject null
Within Groups	51990.744	90	577.675			hypothesis
Total	55988.796	92				

*Source: Field Data (2018); *Significant differences exist at p≤0.05, n=93*

Table 9. Summary of one-way (ANOVA) results on recreation and leisure competence

Sources	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	1672.670	2	836.335	1.177	.313	Reject null
Within Groups	63938.900	90	710.432			hypothesis
Total	65611.570	92				

*Source: Field Data, (2017); *Significant difference exists at P≤0.05, n=93*

Wall and Corn [19] supported the early teaching of orientation and mobility skills. According to them, the safe and efficient travel throughout the environment is a critical component in the education of students with visual impairments. Orientation and mobility evaluation and instruction should begin in infancy with basic spatial concepts, purposeful and exploratory movement. Instruction should then progress through more independent, age-appropriate motor and travel skills in increasingly complex environments.

3.6 Independent Living Skills

Table 7 shows the one-way between-groups analysis of variance (ANOVA) test which checks for the differences in mean scores of the educational levels based on the competence in independent living skills of students with visual impairment. From Table 7, the results show that significant difference does not exist among the levels. The ANOVA test produced a result of *F* (2, 90) = 2.285, p>.05, n=93, Sig. = .108) which gives statistical evidence that there were no differences in mean scores of the levels. This implies that the levels at which students with visual impairment are taught independent living skills did not associate with their competence. It does not, however, suggest that it is not advisable to start at the basic level. Looking at its importance to the visually impaired as claimed by Bardin [20] that it will be appropriate if they are taught independent living skills at the basic level. In the findings of Bardin [20], he asserted that independent living is key to students' achievement, independence, and life success. There are a number of behaviours and skills in the independent living area that needs to be intentionally taught to students with visual impairments.

3.7 Social Interaction Skills

Table 8 presents the one-way ANOVA test which checked for the differences in mean scores of the

levels at which the students with visual impairment were taught the social interaction skills as against their competence. The one-way between-groups analysis of variance (ANOVA) results in Table 8 shows that there were statistically significant differences among the levels. The one-way between-groups analysis of variance (ANOVA) test produced a result of *F* (2, 90) = 3.460, p<.05, n=93, Sig. =.036) which gives statistical evidence that there were differences in mean scores among the levels and as such a follow-up test was required to check for the sources of the differences.

From the Post-hoc test apart from basic and both levels, the test conducted was unable to identify the source of the differences among all the levels even though the overall one-way between-groups analysis of variance (ANOVA) result show (p=.036) a statistically significant difference. The post hoc test implies that there is the difference between basic and both levels and as such it is better to inculcate social interaction skills in students with visual impairment at the basic level than both levels. However, there was no difference between basic and secondary (P=.320) as well as secondary and both levels (P=.432). The results tally with the assertions that social interaction is an essential area of the expanded core curriculum for students with visual impairments. Social interaction skills permeate all aspects of students' life and also an integral part of other areas of the expanded core curriculum such as compensatory access, recreation, and leisure, independent living, and self-determination [21].

3.8 Recreation and Leisure Skills

Table 9 presents the one-way ANOVA test which checked for the differences in mean scores of the levels at which the students with visual impairment were taught the recreation and leisure skills as against their competence. The one-way between-groups analysis of variance (ANOVA) results in the table shows that significant difference does not exist among the levels. The one-way between-groups analysis of variance (ANOVA) test produced a result of *F* (2, 90) = 1.177, p<.05, n=93, Sig. =.313, 2-tailed) which gives statistical evidence that there were no differences in mean scores among the levels and as such a follow-up test was not required to check for the sources of the differences.

Aillaud and Leiberman [22] had expressed the sentiment that recreation and leisure focus on the development of interest and skills involved in physical and leisure activities. They further explained that physical activity is a critical element for good health and a happy lifestyle especially for those with visual impairment. It, therefore, needs to be deliberately planned for these students because lack of vision reduces the opportunity to observe and choose activities of interest. The visually impaired acquire these skills through thoughtfully planned instruction and demonstration to stay healthy for education.

3.9 Career Education Skills

A one-way between-groups analysis of variance (ANOVA) was conducted to compare mean scores of the levels based on the career education skills of students with visual impairment. From Table 10, the results show that there was a statistically significant difference in career education skills efficiency among the levels at which the students who are visually impaired are taught career education. The F-ratio of *F* (2, 92) = 3.355, p<.05, n=93, Sig. = .039, 2-tailed) gives statistical evidence to that, there were differences in mean scores among the levels. Conversely, statistically, the sig value of 0.039 produced from the one-way between-groups analysis of variance (ANOVA) results did not tell which of the levels relates well with the career education skills of students with visual impairment. Hence, a post-hoc test/Fellow Up test was conducted to find the differences in mean scores among the levels.

Table 10. Summary of one-way Analysis of Variance (ANOVA) results on career education skills

Sources	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	4190.283	2	2095.142	3.355	.039*	Reject null hypothesis
Within Groups	56208.620	90	624.540			
Total	60398.903	92				

*Source: Field Data (2018); *Significant difference exists at p≤0.05, n=93*

Table 11. Summary of one-way Analysis of Variance (ANOVA) results on self-determination competence

Sources	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	52.160	2	26.080	.877	.419	Failed to reject null hypothesis
Within Groups	2675.410	90	29.727			
Total	2727.570	92				

*Source: Field Data (2018); *Significant difference exist at P≤0.05, n=93*

The multiple comparisons (Post Hoc/Follow-up test) using, Tukey's test was performed to find the differences in competence in career education of students with visual impairment among levels. Tukey's test as a post-hoc comparison is appropriate when the data meet the assumption of variance. Therefore, considering the Levene's test for this data as presented in Table 10, the assumption of homogeneity of variance was met.

The Tukey's test indicated that the mean score between basic level and both (M= 16.91601*, SR= 6.79401, n=93, p<0.05, Sig. = .038, 2-tailed) was statistically significant. This means that students with visual impairment who are taught career education at the basic level are more competent than those who are taught at both levels. However, the post-hoc test does not show any differences among the other levels. The results give statistical evidence to settle that students with visual impairment who are more competent in career education are taught at the basic level.

The findings are in agreement with Wolffe [23] who advocated that students with visual impairment may need to start career education activities at an earlier age because of the inability to learn incidentally through vision about the environment and what people do for work, low expectation people have for the visually impaired based on misconception, lack of realistic feedback and inability of the visually impaired to see what classmates can do and finally limited exposure to role model of successful adults with visual impairment.

Table 11 depicts the one-way ANOVA test which checked for the differences in mean scores of the levels at which the students with visual impairment can be competent when taught the self-determination skills. The one-way between-groups analysis of variance (ANOVA) results in the table shows that significant difference does not exist among the levels. The one-way between-groups analysis of variance (ANOVA) test produced a result of F (2, 90) = .877, p>.05, n=93, Sig. =.419, 2-tailed) which gives statistical evidence that there were no differences in mean scores among the levels and as such a follow-up test was not required to check for the sources of the differences. This, therefore, means that self-determination skills could be taught at each of the levels and this will still have a significant impact on the competence of students with visual impairment.

3.10 Self-determination Skills

Wolffe, Rosenblum and Cleveland [10] had posited that without structured self-determination skills the visually impaired may be at risk of remaining dependent on others for life. Teaching students with visual impairment the critical skills that support self-determination is a major contribution to helping them learn how to make good decisions for themselves, solve problems and set goals, speak up for themselves and communicate effectively and above all develop higher levels of self-esteem and self-confidence. Wolffe, Rosenblum and Cleveland [10] concluded that we should be concerned about the welfare of the needs of students with visual impairment in order to provide opportunities for them to develop and practice important life skills.

To develop self-determination skills, children or adolescents who are visually impaired must be provided with the necessary knowledge and experience. They must learn which choices are available to them, have the skills necessary to take advantage of these choices and be given opportunities to make age-appropriate choices for themselves. To do so, they often need direct instruction in learning to evaluate options and in making choices [24].

4. CONCLUSIONS

Based on the results of the study, it can be concluded that majority of the students with visual impairment started the study of the expanded core curriculum skills from the basic level of education. Even though the study could not find statistical difference for some of the dimensions (that is, Independent Living Skills,

Recreation and Leisure Skills and Self-determination Skills) of the expanded core curriculum, it became evidently clear that those who started the learning of the expanded core curriculum at the basic level proved to be very competent in most of the dimensions.

5. RECOMMENDATIONS

The following recommendations have been made for educational policies and practices. The Special Education Division of Ghana Education Service should intensify the teaching and learning of expanded core curriculum skills at the basic school so as to continue to repose ECC competence throughout a child's academic life.

The Special Education Division of Ghana Education Service should ensure that all the expanded core curriculum skills are continued to be taught to students with visual impairment in secondary institutions to strengthen the knowledge and skills in expanded core curriculum they acquire at basic level.

CONSENT

As per international standard informed and written participant consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard written ethical permission has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Wolffe KE, Sacks SZ, Corn AL, Erin JN, Huebner KM, Lewis SK. Teachers of students with visual impairments. What are they teaching? Journal of Visual Impairment & Blindness 2002;96:293-304.
2. Jacobson WH. The art and science of teaching orientation and mobility to persons with visual impairments (2nd ed.). New York: AFB Press; 2013.
3. Loumiet R, Levack N. Independent living: Activity routines. Austin: Texas School for the Blind and Visually Impaired; 2009.
4. Barraga N, Erin JN. Visual impairment and learning (4th ed.). Austin, TX: Pro-Ed.Bryman, A. Social research methods. Oxford: Oxford University Press; 2012.
5. Morelli T, Folmer E, Foley T, Lieberman LJ. Improving the lives of youth with visual impairments through exergames. Insight Journal. 2011;4:160-170.
6. Shonkoff JP, Phillips DA. Introduction. In JP Shonkoff & DA Phillips (Eds.). From neurons to neighborhoods: The science of early childhood development. Washington, DC: National Academy Press. 2000;19-38.
7. Lohmeier KL. Implementing the expanded core curriculum in specialized schools for the blind, Review. 2005;37(3):126.
8. Zebehazy KT, Smith TJ. An examination of characteristics related to the social skills of youths with visual impairments. Journal of Visual Impairment Blindness. 2011;105(2):84.
9. Sapp W, Hatlen P. Perceptions of teachers of students with visual impairments on their preparation to teach the expanded core curriculum. Unpublished manuscript; 2007.
10. Wolffe KE, Rosenblum LP, Cleveland J. Self-determination. ECC essentials: Teaching the Expanded Core Curriculum to Students with Visual Impairments. 2014;470-509.
11. Council for Exceptional Children. CEC policy on inclusive schools and community settings. Teaching Exceptional Children. 1993;25(4):2-5.
12. Cooper RA, Schindler T. How many people would benefit from a smart wheelchair?. Journal of Rehabilitation Research & Development. 2000;45(1).
13. Hatlen P. The core curriculum for the blind and visually impaired student, including those with additional disabilities. Review. 1996;28(1):25-32.
14. Koenig AJ, Holbrook MC. Ensuring high-quality instructions for students in braille literacy programs. Journal of Visual Impairment and Blindness. 2000;94(11):677-694.
15. Langley B. Individualized systematic assessment of visual efficiency. Louisvelle, KY: American Printing House for the Blind; 2014.
16. Smith DJ. Visual impairment is associated with physical and mental comorbidities in older adults: A cross-sectional study. The Blind. 2014;12(3):181.
17. Field A. Discovering statistics using SPSS (3rd ed). Los Angeles: Sage; 2009.
18. Koweru RA, Omoke CM, Orodho JA. The role of assistive technologies on quality

educational outcomes of students with visual impairment in Kisumu Country, Kenya. 10SR. Journal of Humanities and Social Science. 2015;20(3):39-50.
19. Wall ER, Corn AL. Orientation and mobility instructional content for children and youths: A Delphi study. Journal of Visual Impairment and Blindness. 2006;100:331-342.
20. Bardin JA. Independent living. In CB Allman, S Lewis, SJ Spungin (Eds.), ECC Essentials: Teaching the expanded core curriculum to students with visual impairments. New York, NY: AFB Press. 2014;283-323.
21. Sacks SZ. Social interaction. In CB Allman, S Lewis, SJ Spungin (Eds.), *ECC essentials:* Teaching the expanded core curriculum to students with visual impairments. New York, NY: AFB Press. 2014;324-368.
22. Aillaud CL, Lieberman LJ. Everybody plays: How kids with visual impairment play sports. Louisville, KY: American Printing House for the Blind; 2013.
23. Wolffe KE. Self-determination. In CB Allman, S Lewis, SJ Spungin (Eds.). *ECC essentials:* Teaching the expanded core curriculum to students with visual impairments. New York, NY: AFB Press. 2014;470-509.
24. Wolffe KE, Erin JN. Transition for students who are blind or have low vision. In ML Wehmeyer, KW Webb (Eds.), Handbook of transition for youth with disabilities. New York: Routledge; 2012.

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