Attitudes Towards Use of Hypermedia in Hearing Impaired Students' Pedagogy

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Abstract
This study investigated the attitudes on use of hypermedia based on constructivist learning context. Traditional methods and tools applied in classrooms are not found to be attractive or thrilling resulting to boredom, fatigue and negative attitude towards learning. New technologies such as hypermedia proved to be successful for improving the ability of deaf children in pedagogical process promoting attention, interest and attitude. While using hypermedia can be viewed as a new platform for delivery, there are still many teachers who look to hypermedia as a replacement of their current teaching methods. The objectives of the study were to; investigate students' attitude towards the use of hypermedia and establish teachers' attitude on use of hypermedia. The study was informed by constructivist theory emphasizes learner-centered learning. The study assumed a pragmatic research paradigm adopting mixed methods using quasi experimental approach involving Solomon four nonequivalent control group design. The sample size consisted of 79 students and 10 teachers. Data instrument was questionnaire. Data were analyzed through inferential statistic chi- square and descriptive include; tables, mean, frequency, percentage and standard deviation. The results indicate that hypermedia impact positively; students were positive and satisfied with hypermedia because it is found to be enjoyable, motivating, interactive, promotes understanding, encourages autonomy and foster learning than traditional learning. Teachers agreed that hypermedia leads to greater understanding of abstract topics. The findings of this study may create awareness and need for integrating hypermedia in pedagogy to improve attitude, thus helping learners to focus attention that promotes teachers' instructional technique.
Keywords: Hypermedia, Attitude, Pedagogy, Hearing Impaired, Geomorphology

1. Introduction

It is recognized that attitudes are precursors of behaviour, a predisposition to behave in a certain way. Attitudes have three components, feeling, thinking and acting. While hypermedia provides many new opportunities for issue like learning styles, student-centered instruction are promoting higher-level thinking and teachers' attitude (Toe, 2008). Teachers' attitude leads to technology being used as a substitute for other tools in their traditional teaching styles instead of a new approach for instruction (Judson, 2006). Many teachers are in favor of adapting constructivist instructional approaches but are not sure of where to begin. However they are gaining more positive attitudes towards hypermedia after a realization of its potential for learning. Judson (2006) acknowledges that positive attitude towards the use of hypermedia in classroom will draw the greatest advantage. Attitude can be related to a number of facts such as experience, age, gender and academic performance. Findings revealed that teachers felt powerless to change their attitudes and perceptions on their present practices to shift to technology use in the classroom and further that teachers' preferred traditional method of teaching rather than using technology. As more and more activities in the classroom are orchestrated with computers, teachers are realizing that hypermedia is more complex and more capable than other media such as filmstrips or overheads (Hew, 2007). Teacher's attitude and understanding of technology use affect their technology use in instruction (Dudeney & Hockly, 2007; Liu & Huo, 2007; Park & Son, 2009). For example if teachers perceive technology as a threat to their traditional teacher-centered methodology in which they have received years of training, they may resist the use of technology (Liu, 2007).When teachers have positive beliefs and attitudes towards computers, hypermedia will be effectively implemented into classroom, for example if they have an expectation that implementing hypermedia is valuable to student learning.

There is some evidence that attitude towards technology relates positively with achievement (Matter & Schau, 2002; Shapley et al., 2010). Akcay et al. (2006) concluded that students' attitudes and achievements towards analytical chemistry were better with technology. Hence there is need to provide technology based teaching for enhancing the positive attitude of HI students because it correlates to academic achievement. New technological learning covers the existing gaps and acts as bridge for learning effectiveness. Students with positive attitudes are more likely to sustain their efforts and have the desire to be involved in learning tasks. In reviewing factors that can influence attitudes Osborne et al. (2010) emphasized that how materials are delivered in classrooms can affect students attitude. Students enjoyed and preferred hypermedia formats than traditional methods probably because

of their increased motives and attitudes (McGowan, 2009). Morris & Finngan (2008) found that students who have negative attitude towards hypermedia tended to have difficulties locating content and resources and often felt lost in the course. Conversely, students who successfully navigate hypermedia believe they have ability to control the environment of the course (Morris & Finnegan, 2008) and to meet their own intrinsic learning goals by placing new knowledge in their own contextual framework. Thus the nature of technology caused the shift in students' attitude.

2. Problem
In traditional classroom settings, the teacher will begin class by answering questions from the previous work, then teach the new lesson, give notes and sometimes give assignments. Deaf students often perceive that they receive a distorted message when a non-signing teacher's lecture is translated by the interpreter (Vignare et al., 2007). Therefore it is important to identify the most effective strategies in the content delivery process that can impact positively and achieve objectives (Alias, 2010). Teaching physical Geography education is a challenge, initial research suggests that hypermedia learning is at least a viable alternative to the traditional classroom. Hashim et al. (2013) pointed out that problems that hard-of-hearing students face in the traditional classroom provide opportunities for the hypermedia movement. Several studies (Gracia & Gracia, 2005; Greene, 2007) have indicated that students play a more active role in the educational process with the use of hypermedia learning systems. Hypermedia has potential for improving quality education by increasing learner attitude, motivation and engagement hence promoting shift. It is for this reason that the researcher in this study set to find out if use of hypermedia can improve attitude.

3. Methodology
The study assumed a pragmatic research paradigm adopting mixed methods using quasi experimental approach involving Solomon four nonequivalent control group design. The study was conducted in Kenya. The sample size consisted of 79 students and 10 teachers. The researcher employed probability sampling procedure. Purposive sampling was used to obtain HI residential mixed secondary schools, Geography teachers and form three Geography class. Schools were randomly selected and assigned to control and experimental groups. The research instrument was questionnaire involving both open and closed ended question items. Data were analyzed through inferential statistic chi- square and descriptive included; tables, frequency and percentage.

4. The findings and Discussion
The following is the presentation and analysis of empirical data obtained from the field. The data was analyzed thematically following the objectives regarding students' and teachers' attitude on use of hypermedia and effectiveness on use of hypermedia. Alongside hypothesis stated in null form and tested at alpha level of 0.05α was addressed; There is no significant effect of hypermedia on learners' and teachers' attitude towards Geography. Accept the alternative hypothesis which states, there is significant effect of hypermedia on learners' and teachers' attitude towards Geography. Attitude is a major factor in integration of technology Okolo & Bouk (2007); Silver-Pacuilla (2006). It is recognized that attitudes are precursors of behaviour, a predisposition to behave in a certain way. It is widely recognized that attitude is an essential component of instructional technique that result in improved outcomes for the students. Onasanya (2008) confirms that instructional materials stimulate learning because students get more attentive and teachers' positive attitude generates more interest for the lessons they teach or learn.

4.1 Attitude of the Students Towards Use of Hypermedia in Learning Process
Hypermedia instruction has evolved from teacher-learner controlled learning. It promotes learning in various ways. And the significance of hypermedia in pedagogy and its motivational effects are stressed on change of attitude. Hypermedia presentation provides animation, active interaction, individualization and learner control impact positively and foster learning than traditional learning. Jimo (2009) noted that use of instructional media in teaching is a necessary practice for effecting learners' behaviour change. Both teaching and learning becomes pleasant experiences where learners enjoy to the maximum. The teacher goes through less stressful moments since instructional media bring reality in the classroom.

Table 1: Chi-square Comparison between Experimental and Control Groups

Attitude	Control Group		Experimental Group	
	Frequency	Percent	Frequency	Percent
Positive	20	48.78	29	76.31
Negative	21	51.21	9	23.68

$\chi^2 =21.216$ df =2   p< 0.05

Each group was asked whether use of hypermedia has positive influence on their learning of Geomorphology in Geography. The study compared the data calculated from the Chi Square (χ^2) on the positive and negative

attitudes of experimental and control groups. A chi-square performed, χ^2 (2, N= 79) = 21.2, p< 0.005 showed significant difference between the attitude of experimental and control groups. The results from table 1 revealed that experimental group had positive attitude on use of hypermedia than control. Most of learners were classified as having a positive attitude on use of hypermedia in learning, experimental had (76.31%) than control group (58.53%). In reviewing factors that can influence attitudes Osborne et al. (2010) emphasized that how materials are delivered in classrooms can affect students' attitude. Akcay et al. (2006) concluded that students' attitudes and achievements towards analytical chemistry were better with technology. The strength of constructivism lies in its emphasis on learning as a process of personal understanding and development of meaning in ways which are active and interpretive. In this way learning is viewed as the construction of meaning rather than as memorization of facts. This improves attitude and learners with positive attitude are motivated to learn. The finding is supported by Roblyer & Dering (2013) who postulate that hypermedia promotes learning while motivating students allowing them to display and summarize information and knowledge, using a combination of text, video, music, animation, graphics and sound effects. Further, researchers like Muka (2009) argue that a learner with special needs benefit greatly from using aids such as word processor and multimedia for example hypermedia. However Morris & Finngan (2008) contradicts the finding stating that students have negative attitude towards hypermedia.

Table 2: Perception on Effectiveness of Hypermedia in Learning Process

Variables	Control		Experimental	
	Frequency	Percent	Frequency	Percent
V. good	3	7.89	35	85.36
Good	27	71.05	2	4.87
Poor	8	21.05	4	9.75
TOTAL	38	100	41	100
χ^2 = 4.438	df = 1		p- value = 0.35	

The students were asked to state the effectiveness of hypermedia, from table 2 the results show that students from both groups accepted that hypermedia is good with control group rating at 71.05% and experimental 85.36%. After using hypermedia the results revealed that experimental group was impressed with the use of hypermedia as indicated by higher percentage. A chi-square test results χ^2 (1, N = 79) = 4.4, p = 0.35 shows that more students agreed that hypermedia is an effective media in teaching and learning process because there is no significant difference between the experimental and control groups. It is an instructional material where learner is given opportunity to review the topic on their own pace and in accordance to their individual interests, needs and cognitive process. Robleyer & Doering (2013) report that hypermedia allows the user to interact with media that can contain text, graphic, animations and film. Students can learn more effectively with focused attention than those who study with separate media where attention is split. SEG Research (2008) further confirms this finding '' this is because human brain will have more processing loads to integrate and re-arrange all different sources of information''. However there are those who said that it is poor, control had 21.05% and experimental 9.75% as revealed in table 2. Students may take hypermedia as an entertainment tool and not for learning. It is true that using hypermedia in the classroom by itself in not effective unless the teacher has the theory model of instruction (Gorder, 2008).

4.2 Students' Attitude and use of Hypermedia

The results from table 3 revealed that on a Likert scale ranging from 1-5, the majority rated 1 and 2 their satisfaction with hypermedia. The experimental group has shown by over 75% that hypermedia is an effective learning tool as reflected by the students. Students responded in the same way that they can remember best by picturing in their mind above 70% with p-value 0.039 less than alpha. Hypermedia is a valuable media for teaching students with hearing impairment. Many students showed interest and therefore Geography teachers should integrate hypermedia in their instruction to motivate and encourage them to learn more effectively. Abu Khtwa (2012) observes that hypermedia is self-explanatory with logical sequence in terms of their format and artistic demonstration.

They further agreed that hypermedia support learning according to their needs. Individual   differences can be accommodated by having alternatives in learning for example hypermedia instructions, students will then be engaged at a deeper level and appreciate the student-centered learning approach with more sense of participation (Keppell, 2008). Experimental group strongly agreed (87.8%) that hypermedia positively changes the learning climate in the classroom and had a p-value of 0.000. Also (73.3%) agreed that they are able to work with hypermedia comfortably. It was confirmed that hypermedia facilitates independent learning with experimental group rating at 94.7% and control 64.9%. Dabbagh et al. (2009) support these findings, '' learners have the ability to direct their own learning process. Hypermedia also enable students acquire knowledge, skills and attitude, this had a p-value 0.000 less than alpha thus students agreed with the statement.

Experimental group which had experience with hypermedia agreed 100% that it facilitates creativity. From the results it can be concluded that learners have positive attitude towards use of hypermedia. And positive attitude

enhance achievement. The finding concurs with Akcay et al. 2006; Shapley et al. (2010) there is some evidence that attitude towards technology relates positively with achievement. Therefore positive attitudes are associated with high level of hypermedia experience. They enjoyed and preferred hypermedia formats than traditional methods probably because of their increased motives and attitudes (McGowan, 2009). Osborne et al. (2013) emphasized that how materials are delivered in classrooms can affect students attitude.

Table 3: Chi-square test between the Students' Attitude and use of Hypermedia

Attribute		Contr %	Exp %	Df	χ^2 -value	p-value
I use hypermedia to;	A	78.4	75	2	6.481	0.039
Remember by picturing in my mind	U	10.8	25			
Demonstrate what I have learnt	D	10.8	0			
	A	52.9	87.8	2	11.318	0.003
See information on the screen images,	U	23.5	7.3			
text, graphics and animations	D	23.5	4.9			
Support my learning according to my	A	64.9	92.5	2	9.941	0.007
needs	U	21.6	7.5			
	D	13.5	0			
Develop understanding of the role and	A	55.9	97.5	2	19.107	0.000
importance of hypermedia	U	26.5	0			
Positively change the learning climate	D	17.6	2.5			
in classroom	A	55.6	97.6	2	19.926	0.000
	U	19.4	2.4			
Work comfortably	D	25	0			
	A	43.2	87.8	2	22.638	0.000
	U	16.2	12.2			
Facilitate independent learning	D	40.5	0			
	A	53.2	53.3	2	0.460	0.015
Acquire knowledge , skills and	U	14.9	10			
attitude	D	31.9	61.0			
	A	64.9	94.7	2	10.460	0.005
Facilitate creativity	U	18.9	2.6			
	D	16.2	2.6			
	A	44.4	87.8	2	20.789	0.000
	U	19.4	12.2			
	D	36.1	0			
	A	55.9	100	2	21.176	0.000
	U	8.8	0			
	D	35.3	0			

5. Teacher Attitude on Integration of Hypermedia in Classroom

The use of hypermedia in education field has brought significant changes in the interaction and interactivity in pedagogy (Fruent et al., 2010). Hypermedia is designed to support activities mediated by ICTs and allows the process of teaching and learning through pedagogical mediation between teacher and students. It is capable of integrating multiple media, besides it can provide positive attitude due to interactions and socialization, experiences and production (Grossi et al., 2013).

5.1 Effectiveness of Hypermedia in Teaching Geomorphology for HI Learners

Teachers with ICT experience tend to be more comfortable and efficient with instructional media while inexperience could cause negative attitude towards hypermedia. Hypermedia is one of the new technologies in the instructional market. It is most effective in teaching HI learners because it has ability to engage a wide variety of tools where individuals can choose what to use. Onasanya (2008) observes that change of attitude from teachers would be beneficial to the learners. Thus the emergence of this new technology calls for change of attitude towards the use. Positive attitude and values towards hypermedia would influence their pedagogical practices which transform peoples' behaviour, knowledge and attitude about the value of embracing something more beneficial. Therefore special teacher of the deaf should be prepared to use innovative pedagogy in classroom. This will assist the learners and may enhance the establishment of effective communication and instruction. Bottoni et al. (2011), the production of multimedia material by deaf-center learning environment (DALE) has helped HI students in overcoming learning difficulties. Instructional media should not be used because it is available or it has shown effectiveness in some cases. But instead it should enable the process of teaching and enhance learning. Teachers who use hypermedia must understand that technology does not replace good teaching; instead it opens new

horizons for discovery and exploration. Furthermore, teachers should not attempt to use technology for technology's sake but to enhance learning. There are a number of studies that have established the effectiveness of technology on the HI student learning for example intelligent thai text to thai sign translation language for learning (Dangsaart et al., 2008). Multimedia application to change the text or voice to an animated sign language (Allan & Harrison, 2010) web 2.0 (Vrettaros et al., 2010), and use of video (Debevc et al., 2010; Obondo et al., 2013) have helped the teaching and learning process of the students.

Table 4: Difficulties Encountered in Selecting Hypermedia

Difficulties in selection	1 F %	2 F%	3 F%	4 F%	5 F%	6 F%	7 F%
Student's preference approach	1(10)	1(10)	3(30)	2(20)	1(10	2(20	0(0)
Students individual difference	3(30)	3(30)	1(10)	0(0)	0(0)	2(20)	1(10)
It is difficult to access	6(60)	2(20)	1(10)	1(10)	0(0)	0(0)	0(0)
Lack of guide books	1(10)	2(20)	0(0)	1(10)	1(10)	4(40)	1(10)
Students' attitude does not allow	0(0)	0(0)	4(40)	1(10)	1(10)	2(20)	2(20)
Class roll doesn't allow	0(0)	0(0)	1(10)	1(10)	0(0)	3(30)	5(50)

N = 10

Note; percentage is in parentheses

Table 4 reveals that many teachers (60%) ranked difficulties to access hypermedia as the most popular problem they encounter in thinking about selecting materials /activities for teaching Geography. Access to instructional media is an important factor affecting selection of hypermedia for instruction. Teachers can only use what they are able to get. Slobodzian (2009) reports extra learning resources may not be accessible in class and there is a widespread lack of accessible interactive materials (Parton, 2006). Hypermedia is an instructional material that is assembled by the user according to the content, it is not a material that is readily available. Since most teachers are lacking technical skills, they are not able to access it easy but the attitude of the teacher towards the use of hypermedia would influence them directly to prepare and use it. This finding is supported by other researchers, Flick (2007) affirms that availability of and access to technology is important factors that determine the use.

Attitude (50%) is another factor that is most considered on use of hypermedia. Attitude plays a very big role on the implementation of instructional media. Teachers have the option on what to choose for effective teaching. Innovative teachers would spend time to prepare and use hypermedia in their instruction while those with negative attitude might not make any effort to prepare and use hypermedia (Begi, 2007; Kadzera, 2006). Toe (2008) further affirms that teachers' attitude and beliefs often stop them from fully integrating hypermedia into their instruction. Smarkola (2008) examined teachers' intention to use computer for instruction and found that it can be predicted by belief-based measures pertaining to attitude (usefulness and compatibility), subject norms (peer influence and superiors influence), and perceived behavioral control (self-efficacy technology and constraints / support). Further Park & Son (2009) revealed that internal factors such as teachers' limited computer skills, knowledge about computers and beliefs and attitudes significantly affects teachers' decisions on the use of hypermedia in teaching. However Angeli & Valandes (2009) assert that integrating hypermedia into teaching means considering the needs of the students, curriculum and availability of hypermedia as well as the lesson planning and media design issues.

Individual difference (30%) was seen a popular difficulty encountered by teachers in selecting hypermedia. HI students have varied disabilities for example in a class there may be dump, deaf, partial deaf, deaf and dump among other individual differences. Therefore it becomes difficult for a teacher to select media that can suit all of them. The finding is supported by several researchers Yang &Tsai (2008); Graf et al. (2009); Naimie et al. (2010) indicate, identifying the uniqueness of learning style is important in encouraging students' involvement in the learning process.

Number of student in class was seen as insignificant, because class size was (50%) ranked last by many teachers. Medium such as hypermedia is suitable for any number of the students in a class whether large or small. In this study classes were generally large. HI classes should have a maximum of twelve students but all the sampled schools had fifteen and above. Technology can be the great equalizer in a classroom with diverse learners. Whereas teachers can find it difficult to differentiate instruction for 30+ students in one class, all with different needs and abilities, Machnaik (2007) postulates, teaching style, like learning are highly personal and influenced by extrinsic and intrinsic factors. There was no doubt with the ranking as HI classes in many parts of Kenya may have between eighteen to thirty students. One goal of Education in Kenya gives equal educational opportunities irrespective of any real or imagined disabilities (EFA, 2004). This has given rise to population of children with disability. Many teachers consider that these classes are too large and they give rise to a number of problems. The problems include discomfort, control, individual attention and learning effectiveness. However this was not experienced during hypermedia presentation because the media was interesting and students' attention was captured due to its high interactivity. Schmidt et al. (2009) contend that hypermedia allows the students to engage more fully with the subject matter at hand, facilitates deep understanding because of its interactivity.

6. Other Factors for not Integrating Hypermedia in Teaching Geomorphology for HI Learners

Teachers were further asked to indicate difficulty level of using hypermedia. Table 5 gives response. The results reveal that hypermedia is interesting (70%) and increases understanding (80%). The use of moving pictures and linking different pictures to text fields to related subjects give good possibilities to describe concept. Kindler (2006) stated that hypermedia stimulates interest and assist students to enjoy and understand lessons easily. Ma, O'Toole & Keppell (2008) postulate that students will be engaged at a deeper level and appreciate the student-centered learning approach offered by hypermedia with more senses of appreciation.

Table 5: Teachers Reasons for using Hypermedia

Level of use			Level of non-use		
	Frequency	Percent		Frequency	percent
Easy to use	3	30	Difficult to use	7	70
Interesting	7	70	Boring	3	30
Valuable	6	60	Worthless	4	40
Increase understanding	8	80	Decrease understanding	2	20
Easy class control	6	60	Diff. class control	4	40
Doesn't take much time	3	30	Takes too much time	7	70

N = 10

However most teachers agreed that hypermedia takes too much time to prepare (70%) and therefore it is difficult to use (70%). Most training colleges and university do not provide instruction designed to teach students the criteria for selecting the media relevant to the objectives and methods of instruction (Heo, 2011). Hence teachers have refused to change their attitude and accept technology utilization (Liu & Huo, 2007).

7. Conclusion

It is evidenced from the study that use of hypermedia in pedagogy provides a positive attitude and facilitates students' learning. Students learn the material faster and have better attitudes toward learning as they learn in an interactive instructional environment. Therefore it is one technique of teaching that rises above the challenges of performance of the HI learners. Hence teachers need support to develop new approaches to teaching and greater access to reliable technology that are herald to HI learners.

8. Recommendation

Teachers should exploit the potential of hypermedia to develop a wide range of student's skills as possible. Therefore teachers should use hypermedia regularly.

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