

The role of instructional media in tertiary students' conceptualization of intended learning outcomes: Current empirical evidence.

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Abstract

The debate on the role of instructional media is an ongoing event, as both schools of thought do not agree of the effectiveness of instructional media in conceptualization of intended learning outcomes. This study was "To justify and verify, if there is a correlation between instructional media and students' academic achievement, at tertiary level of education." Taking cues from Hofstee (2006), the survey method was considered appropriate to investigate the opinions or perceptions of tertiary educators on the impact of instructional media in the tertiary students' conceptualization of intended learning outcomes. The population comprised of all tertiary institutions in Botswana registered and accredited by either Botswana training authority (BOTA) and or by Tertiary Education Council (TEC). The target respondents were the educators in these tertiary institutions and those who hold positions of responsibilities. The probability sampling procedure- multi stage sampling technique was used to sample 300 respondents. The findings were: 88.7% of reported they were other benefits of using instructional media, 81% 's perception was that there were some differences in conceptualization among students taught using instructional media from those taught using the traditional ways. 70.7% agreed "Students who are taught using instructional media perform better than those students taught using traditional ways up to 50% or more. 83.6% viewed instructional media as providing "motivation, attentiveness, and widening the tertiary students' scope of knowledge." It was therefore concluded that, there was a strong, positive correlation between instructional media usage and tertiary students' conceptualization of intended learning outcomes in Botswana. Therefore, a policy formulation is needed on instructional media and teaching /learning process- since it seems there is no clear policy on the financing, procurement, and use of instructional media at tertiary level of education. Management of institutions should take a lead to make instructional media a priority and key component of effective teaching and learning process at tertiary level of education in Botswana. This would enhance conceptualization of intended learning outcomes, making teaching and learning to be interesting to tertiary students in Botswana.

Key words: Role, instructional media, tertiary students, conceptualization, intended learning, outcomes, empirical evidence.

1.0 Introduction

Instructional media has been an integral part of teaching and learning. The assumption has been that student's academic achievement or performance largely depends on instructional media usage during the teaching and learning process. The debate between Robert Kozma and Richard Clark of 1994 marks the point of departure on the effectiveness of instructional media in the teaching and learning process (Marx 2006). The debate seems to some extent to be more about technology and its ability to help students learn better, when it comes to students' conceptualization of intended learning outcomes (Moffat 2013; Marx 2006). This is the reason why it is argued that, "Clark and Kozma's great debate focuses on whether Gweshe Murombo Anold, Prem Jotham Heeralal Heeralal, vol 5 issue 12, pp 64-76, December 2017

technology or media affect the learning process or is media just the vehicle for instruction” (Moffat 2013:1). The researchers have not come to a conclusive agreement about the effectiveness of instructional media; rather they have produced two emerging schools of thought, that is: the strong media effect and the weak media effect. The strong media effect school of thought purports that instructional media enhances conceptualization of intended learning outcomes, whereas the weak media effect on the other hand argues that instructional media do not enhance conceptualization of intended learning outcomes, but just convey the information to the learner without any effect on the learner’s academic achievement. In today’s learning environment, there is no question about using instructional media in the teaching and learning process. Instructional media is used to reinforce, motivate, and generally improve the conduciveness of the learning environment. It is therefore imperative to find out the role of instructional media in the teaching and learning process at tertiary level of education, following the recent findings and conclusion by Jotia and Matlale (2011:119), “in order for social studies teachers to succeed ...there is a need to use instructional materials...”

2.0 Literature review

The origins of this debate started when Richard Clark’s article published in 1983 down played the role of media to a mere delivery mechanism (Moffat 2013:1). Ten years later, Kozma wrote a rebuttal to Clark’s contention thus began the debate of media versus method (Moffat 2013). When Kozma in 1994, opposing Clark contended that, instructional media itself can influence teaching and learning under certain conditions and with proper process. Kozma viewed both instructional media and method to have a crucial role in the design of instruction (Moffat 2013). Whereas, on the other hand, Clark in 1994, argued that; “it is the method rather than media that influences academic achievement.” (Marx. 2006:02). The basic idea of Clark’s argument is that teaching methods have the most influences on learning (Moffat 2013). Thus Clark (1983:445), concludes, “The best current evidence is that media are mere vehicles that deliver instruction but do not influence students achievement any more than the truck that delivers our groceries causes changes in our nutrition.” Put simply Clark (1983), argued that, it is not instructional medium, but, the content, that enhances the conceptualization of intended learning outcomes. Clark (1983:456), argues, further that “All current views of media comparison studies suggest that we will not find learning differences that can unambiguously attributed to any medium of instruction. It seems that existing research is vulnerable to rival hypotheses concerning the uncontrolled effects of instructional method and novelty.”

On the other hand, Kozma (1994) argues that, media can influence learning, and that instructional media can enhance conceptualization of intended learning outcomes. Kozma (1994) argues that, instructional media influence learning under certain conditions with proper process. Kozma contends that, the studies, carried out which Clark (1983) refers to, failed to establish a relationship between instructional media and learning because the theories, research and designs have been constrained by vestiges of behavioral roots from which the discipline of education sprang (Kozma 1994:2). In other words, Kozma (1994) disputes the findings and the conclusions by Clark 1983, that they were flawed, which is the reason why they failed to establish the relationship between instructional media and students’ conceptualization of intended learning outcomes. Kozma’s main argument is that media and methods are extricably interconnected. Because the method that one adopts in the teaching and learning process has a bearing on the instructional media that is going to be employed during instructional delivery. Hence there is a degree of connectivity between the method and instructional media. This connectivity is the cornerstone of Kozma’s argument that one cannot separate instructional method from instructional media. Thus, Kozma (1994:3) asserts that, “We will understand the potential for a relationship between media and learning when we consider it as an interaction between cognitive processes and characteristics of environment”. This means one cannot divorce learning from the environment, for instance, the learning environment may include instructional media such as; models, motion pictures, computers, literature, the teacher and the content to be taught, all these contribute to the learning environment, apart from the physical environment where teaching and learning is taking place. The macro environment (which includes the political, social, economic and technological) also plays an important role, in the teaching and learning.

The debate between Kozma and Clark produced two schools of thought on the effectiveness of instructional media; that is the Strong media effect and the Weak media effect.

2.1 The Strong Media Theory

The strong media effect school of thought claims that, instructional media influence academic performance of students. This means that, learners who are exposed to instructional media learn more and perform better academically than those

who are not exposed to instructional media, in other words, instructional media enhance conceptualization of intended learning outcomes. There are several researchers, such as; Isiaka (2007), Bada (2011), Gulek and Demirtas (2005), that support this school of thought. Rutz, Eckart, Wade, Maltibie, Rafter and Elkins (2003), found that instructional media influence academic achievement of students, when they evaluated the final grades, in their study to compare technology-enhanced and traditional instruction for a course in statistics. They found out that the Web assisted instruction mean of 76.1 compared to Traditional instruction at 67.8 percentage point. The mean difference is at 8.3 percentage point, showing significant difference between the means of those students taught using technology enhanced instruction and those taught using the traditional instruction, and this difference attest to the fact that technology impacts positively on students' conceptualization of intended learning outcomes. The results, then, support the strong media effects school of thought. These findings, are in agreement with the results of Peake, Briers and Murphy (2005) who collected data on the relationship between student achievement and the level of technology integration by Texas agriculture teachers, and found that, "while there are no cause and effect relationships addressed in the study, the findings support that a positive relationship exists between the level of agriculture science teacher technology integration and students achievement in basic academic subjects" (2005:29). Peake et al (2005), noted that, there were some "descriptively significant" correlations in this sample. These above findings are also consistent with the findings of Shiratuddin (2001), who carried a study on "Internet instructional method effects on student performance"; the conclusion drawn from the studies was that, "internet instructional method does have significant effect on student performance." (p5) This is, based on several statistical data, of which, are the mean for coursework: 72.13 and 77.54 for convectional teaching method and internet method respectively. Thus Shiratuddin (2001:5), concluded, "Since all sub-hypotheses, H1, H2 and H3 are rejected; it is possible to state that Internet instructional method does have significant effect on students' performance."

Mwei, Too, and Wando (2011), who also investigated, "computer assisted instruction on student's attitudes and achievement in matrices", found that there was a significant difference between students who used computers and those who did not and they concluded that there was a significant difference in the Mathematics achievement.

Their results show that the pretest means are similar; experimental group at 11.11 and control group at 10.03 respectively. The results also show that the posttest means are different; the experimental group at 53.09 and control group at 32.62 respectively. This, then, is attributed to use of Computer Assisted Instruction (CAI). Thus the findings of Mwei et al (2011), confirm the strong media effect theory.

2.2 The Weak Media Theory

The weak media school of thought purports that media do not influence academic achievement or conceptualization of intended learning outcomes. In other words, there are no academic achievement benefits for using instructional media, and there is no distinction in terms of performance between those students who receive instruction with instructional media and those without instructional media. Cradler and Brighforth, (2005:3) assessed over 100 research findings, and found that "...studies generally and consistently show that technology alone does not have significant effect on teaching and learning." They further support their claim, "Technology is a tool that when used with tested instructional practices and curriculum can be an effective catalyst for education reform". They list conditions which are major factors necessary to support the effective application of technology to learning. Among these factors are: Technical assistance that is available when needed, staff development that is individualized to the needs of the teacher, understanding of ways to integrate technology into education reform, teacher access to technology during planning and long term staff development to support the integration of technology in to education (p3-4).

In other words, without these conditions or some of the conditions according to Cradler and Brighforth (2005), instructional media may not be effective to enhance conceptualization of intended learning outcomes. In other words technology alone cannot be accounted for academic achievement or a student academic performance. Kennewell and Beauchamp (2003), who found out that, technology, had no impact on teaching and learning. When they compared Interactive whiteboard (IWB) and networked PCs and found that, among others, that IWB was effective in gaining students' attention, keeping their attention for a longer time, stimulating thinking and maintaining a focus on the subject matter rather than on the teacher or other students. Similarly, Selimoglu and Arsoy (2009) carried out a study, on the effect of PowerPoint preferences of university students on their performance. They found that; there was no identifiable effect of instructional media on conceptualization of intended learning outcome, meaning that, instructional media do not improve the academic

performance of the learners at all. Selimoglu and Arsoy (2009) applied the regression analysis to further confirm if there was a significant difference. However, no significant results were found, and finally, they concluded that, the results indicate students' preferences for PowerPoint have no significant effect on the examination scores.

2.3 The Mixed view of Instructional Media

There seems to be some research finding that one may call "Mixed findings" which supports both schools of thought; the strong media effects and the weak media effects schools of thought, when it comes to the effectiveness of instructional media in teaching and learning process. As a result of studies being carried, there is emergence of research findings that support both schools of thoughts, which one might call mixed results. Thrasher, Coleman and Atkinson (2011), carried out a comparative study on Web instruction versus classroom instruction, on ten spreadsheet projects. Interestingly, of the ten Spreadsheet projects assigned; the data analysis indicates that, students in WBI section of the course only outperformed the classroom students on the first project. Projects 3 through 7, indicated no significant performance differences across the delivery methods, and projects 2, 8, 9 and 10 indicated significantly better performance for those students in the classroom. They concluded that instructional media do not enhance conceptualization of intended learning outcomes. The above results are similar with the findings of Muir (2007), "on research summary on technology and learning." It was concluded that, the results of the effectiveness of instructional media in conceptualization of intended learning outcomes support both schools of thoughts. This is also consistent with the conclusion of Materi (2000:3), who admits that, "The media and learning debate will likely carry on; whatever the study, proponents in either camp will likely find fault with it." This statement affirms the conclusion by Hastings and Tracey (2005:28), who claim that, "Whether or not the media of 1983 could, would, or should affect learning has never been resolved and likely never will be."

3.0 Statement of problem & research objective/questions

The media effects debate seems to be continuing without any indications of resolving the role of instructional media from the time of Clark/Kozma debate of 1994. This is the reason why it is argued that, "Clark and Kozma's great debate focuses on whether technology or media affect the learning process or is media just the vehicle for instruction" (Moffat 2013:1). These researchers have not come to a conclusive agreement about the effectiveness of instructional media as observed by Hastings and Tracey (2005:28), who concluded that, "Whether or not the media of 1983 could, would, or should affect learning has never been resolved and likely never will be." The objective was "To justify and verify, if there is a correlation between instructional media and students' academic achievement, at tertiary level of education." This objective sought to find out if a relationship exists between instructional media and tertiary students' academic achievement. The objective had two research questions (i) What are the other benefits of using instructional media during the teaching and learning process, other than the currently debated conceptualization effect at tertiary level of education (ii) What is the relationship between instructional media and students' academic achievement?

3.1 Methodology

This study used the survey method. Taking cues from Hofstee (2006), the survey method was considered appropriate to investigate the opinions or perceptions of tertiary educators on the impact of instructional media in the tertiary students' conceptualization of intended learning outcomes. Using Wimmer and Dominick's (2003) distinction between descriptive and analytical, this study applied both types of surveys. Therefore the study describes and explains the existing situation about instructional media.

3.2 Population & sample

The population comprised of all tertiary institutions in Botswana registered and accredited by either Botswana training authority (BOTA) and or by Tertiary Education Council (TEC). By 2010, BOTA had registered 284 training institutions (10th anniversary commemorative brochure page 12) and TEC 36 institutions (TEC student directory 2011/2012:23). TEC registers and accredits institutions offering diploma to post graduate programs. Particular period of time. The target respondents were the educators in these tertiary institutions and those who hold positions of responsibilities such as Principals, Vice principals, Deans, Campus managers, Coordinators, Centre Managers, Heads of departments, et cetera in the institutions. This study used probability sampling procedures-multi stage sampling technique, and this was done to increase the degree of representativeness and heterogeneity in the sample for generalization purposes. A total of 300 respondents were sampled. This study then followed a probability sampling technique, the disproportionate stratified

random sampling, because since each institution sampled was issued with 10 questionnaires regardless of the number of respondents in the stratum.

4.0 Data presentation and analysis

Objective two of this study was to justify and verify, if there was a correlation between instructional media and students' academic achievement, at tertiary level of education. In order to meet this objective, the research sub question three was phrased as follows: What are the other benefits of using instructional media during the teaching and learning process, other than the currently debated "conceptualization effect" at tertiary level of education? This research question required respondents to give the other benefits they derived in using instructional media during the teaching and learning process in their respective institutions.

Respondents were given question 9 as to facilitate response to question three as follows: There are some benefits other than academic achievement associated with the use of instructional media in the teaching and learning process. Do you agree or disagree? This question asked whether respondents realized or experienced other benefits associated with the use of instructional media during the teaching and learning process other than the academic achievement of the learners. The following were the response to question 9 on Table 4.1.

Table 4.1: Other benefits of instructional media

RESPONSE TO INSTRUCTIONAL MEDIA BENEFITS	FREQUENCY	PERCENT	VALID PERCENT
Strongly agree	70	38.3	39.3
Agree	88	48.1	49.4
Not sure	12	6.6	6.7
Disagree	4	2.2	2.2
Strongly disagree	4	2.2	2.2
TOTAL	178	97.3	100.0
Did not indicate	5	2.7	
GRAND TOTAL	183	100	

Table 4.1 shows that 39.3% of the respondents **strongly agreed** there were some benefits of using instructional media in the teaching and learning process other than the academic achievement of the learners. 49.4% of the respondents **agreed** that there were some benefits of using instructional media in the teaching and learning process other than the academic achievement of the learners. 6.6% were **not sure**. 2.2% of the respondents **strongly disagreed** that there were some benefits of using instructional media in the teaching and learning process other than the academic achievement of the learners. 2.7% of the respondents did not indicate a response. 88.7% of respondents **agree** to **strongly agree** that there are some benefits of using instructional media in the teaching and learning process other than the academic achievement of the learners.

Yet in order to address fully objective two, another research question four (4) was presented: What is the relationship between instructional media and students' academic achievement? This research question sought respondents to express the type of relationship between instructional media and tertiary students' conceptualization of intended learning outcomes. This research question was the core of this study as it tried to find out the relationship between instructional media and tertiary students' conceptualization. A couple of questions were developed as indicated; questions 10, 11, 12, 13, 14, 15, 16, and 17, were asked the respondents in order to address stated objective.

Question ten (10) was expressed as: In your own opinion is there any difference in academic performance among students taught using instructional media from those taught using traditional ways? Table 4.2 shows the responses given out by respondents.

Table 4.2: Opinion on difference(s) in academic performance

OPINION	FREQUENCY	PERCENT	VALID PERCENT
There is a difference	145	79.2	81.0
No opinion	23	12.6	12.8
Did not indicate a response	4	2.2	2.23
There is no difference	11	6.0	6.1
TOTAL	179	97.8	100.0
GRAND TOTAL	183	100.0	

The valid percentages: 81% of the respondents' said there were differences in academic performance among students taught using instructional media from those taught using the traditional ways. 12.8% of the respondents had no opinion 2.23% of the respondents did not indicate their own opinion. 6.1% of the respondents indicated there were no differences in academic performance among students taught using instructional media from those taught using the traditional ways.

. Question eleven (11) was a follow up to question ten and it was crafted as follows: Select a comment for your response in question 10 above. Question eleven required respondents to justify their responses in question (10) above.

Table 4.3: Respondents' comment for their response in question 10 above

PERFORMANCE	FREQUENCY	PERCENT	VALID PERCENT
Students who are taught using instructional media perform better academically	123	67.2	70.7
Students who are taught using traditional ways perform better academically	6	3.3	3.4
No comment on the two systems of teaching above	32	17.5	18.4
The students generally perform the same academically	13	7.1	7.5
Total	174	95.1	100.0
Did not provide any comment	9	4.9	
Total	183	100.0	

Table 4.3 above shows, respondents commented as follows: 70.7% of the tertiary educators said “Students who are taught using instructional media perform better academically.” 3.4% of the respondents commented that “Students who are taught using traditional ways perform better academically.” 18.4% of the respondents had “no comment.” 7.5% of the respondents said, “The students generally perform the same academically.” It was concluded that 70.7% of respondents agreed that students who are taught using instructional media perform better academically against 3.4% who think otherwise.

Question twelve was: In your opinion, what would you suggest as the average percentage gain of students taught with instructional media against the students taught using traditional ways in their academic performance? This question required the respondents to use their own experience to estimate the percentage gain of students taught using instructional media over those taught without; which could be attributed to the use of instructional media, in relation to students’ academic achievement. The following table 4.4 presents the suggested average percentage gain by the respondents.

Table 4.4: Suggestion on average percentage gain

OPINION ON PERFORMANCE	FREQUENCY	PERCENT	VALID PERCENT
They perform 50% or better more than their counterparts	102	55.7	61.4
They perform 30-49% more than their counterparts	33	18.0	19.9
They perform 10-29% more than their counterparts	23	12.6	13.9
They perform 1-9% more than their counterparts	8	4.4	4.8
Total	166	90.7	100.0
Did not give opinion on average performance	17	9.3	
GRAND TOTAL	183	100.0	

The Valid percentages showed that 81.3% of the respondents reported the average percentage gain of students taught with instructional media against students taught using traditional ways in their academic performance were that students taught using instructional media, they performed 30% to 50% better or more than their counterparts taught using traditional ways in their academic performance. 18.7% of the respondents said the average percentage gain was 1-29% better than their counterparts taught using traditional ways in their academic performance. In summary 100% of the respondents (valid percentages) agreed instructional media enhanced tertiary students’ conceptualization of intended learning outcomes, although at different percentile gain.

Question thirteen was a follow up to questions 10, 11, and 12 and was crafted as: Make a comment about your choice of responses in questions 10, 11 & 12 above. Question thirteen asked respondents to make a comment for their choices of responses in question (10), “In your own opinion, is there any difference(s) in academic performance among students taught using instructional media from those taught using the traditional ways?” Question (11) “Select a comment for your response in question 10 above” and question (12), “In your opinion, what would you suggest as the average percentage gain of students taught with instructional media against the students taught using traditional ways in their academic performance?” The following table 4.5 shows the comments made by respondents.

Table 4.5: Respondents' Comment on choice of their responses in questions 10, 11 & 12

COMMENT ON QUESTIONS 10, 11 AND 12	FREQUENCY	PERCENT	VALID PERCENT
Motivation, attentiveness, widens the scope of knowledge	56	30.6	83.6
Both instructional media and traditional media complement each other	9	4.9	13.4
Traditional ways of teaching are better	2	1.1	3.0
TOTAL	67	36.6	100
NOT COMMENTED	70	38.3	
GRAND TOTAL	183	100	

Valid percentages show 83.6% of respondents, commented that instructional media provided "Motivation, attentiveness, and widens their scope of knowledge." 13.4% of respondents, commented that, "Both instructional media and traditional media complemented each other." 3% of respondents commented that, "Traditional ways of teaching were better."

Question fourteen was one of the core questions phrased as follows: Is there any relationship between instructional media and tertiary students' conceptualization of intended learning outcomes? The purpose of this question was to find out from respondents whether there was a relationship existing between instructional media and student conceptualization of intended learning outcomes, from their own knowledge, educational experience and understanding. The following table 4.6 presents the responses to question fourteen.

Table 4.6: Relationship between instructional media & conceptualization

RESPONSES	FREQUENCY	PERCENT	VALID PERCENT
Yes	104	56.8	59.8
Somehow yes	45	24.6	25.9
I don't know	18	9.8	10.3
Somehow no	1	.5	.6
No	6	3.3	3.4
TOTAL	174	95.1	100.0
Did not Respond	9	4.9	
GRAND TOTAL	183	100.0	

59.8% of respondents agreed that, "yes" there was a relationship between instructional media and tertiary students' conceptualization of intended learning outcomes. 25.9% said somehow yes, there was a relationship. 10.3% did not know whether there was a relationship or not between instructional media and tertiary students' conceptualization of intended learning outcomes. 3.4% of respondents indicated "no" there was no relationship between instructional media and tertiary students'

conceptualization of intended learning out comes. It was concluded that 85.7% of respondents agreed that, “Somehow yes to yes” there was relationship between instructional media and tertiary students’ conceptualization of intended learning out comes.

Question fifteen, followed: How would you describe the relationship you have identified in question 14 above in students’ conceptualizations of intended learning outcomes? This question sought respondents to describe the relationship between instructional media and tertiary students’ conceptualization of intended learning outcomes, as they had identified in question 14. Table 4.7 shows the respondents’ descriptions of the relationship between tertiary students’ conceptualization of intended learning outcomes and instructional media used in teaching and learning process.

Table 4.7: Description of the relationship

DESCRIPTION OF RELATIONSHIP	FREQUENCY	PERCENT	VALID PERCENT
Positive	98	53.6	57.6
Somehow positive	42	23.0	24.7
Not sure	22	12.0	12.9
Somehow negative	6	3.3	3.5
Negative	2	1.1	1.2
TOTAL	170	92.9	100.0
Did not give descriptions	13	7.1	
BRAND TOTAL	183	100.0	

82.3% of the respondents described the relationship between instructional media and tertiary students’ conceptualizations of intended learning outcomes as **somehow positive to positive** relationship. 12.9% of the respondents were not sure how to describe the relationship. 3.7% of the respondents said **somehow negative to negative** relationship.

Question sixteen of this objective was phrased as follows: How do you rate your description of the relationship which you identified in question 15 above, in terms of tertiary students’ conceptualization of intended learning outcomes? The purpose of this question wanted the respondents to rate their descriptions which they had identified in question (15) above using ordinal scale provided of the relationship between instructional media and tertiary students’ conceptualization of intended learning outcomes. The following Table 4.8 presents the results of question sixteen.

Table 4.8: Rating Respondents’ description in question 15

VARIABLES	FREQUENCY	PERCENT	VALID PERCENT
Very strong	45	24.6	26.8
Strong	91	49.7	54.2
No opinion	24	13.1	14.3
Weak	6	3.3	3.6

Very weak	2	1.1	1.2
Total	168	91.8	100.0
Did not respond	15	8.2	
Grand Total	183	100.0	

Results from table 4.8, indicate that 81% of the respondents rated their description of relationship between instructional media and tertiary students' conceptualization of intended learning outcomes as **strong to very strong** relationship. 14.3% of the respondents had **No opinion** on rating their descriptions of relationship. 4.8% of the respondents rated their description as **weak to very weak** relationship.

Question seventeen is the last question under objective two and research question four of this study, this question was presented as: Give reason(s) for your responses in questions 14, 15 & 16. The purpose of this question was to provide the respondents with an opportunity to express personal reasons for their responses to questions (*see questions 14-15 above*). The following Table 4.9 provides a summarized thematic reasons form respondents.

Table 4.9: Respondents reasons for questions 14, 15 16

REASONS	FREQUENCY	PERCENT	VALID PERCENT
Visual instruction, skills, improved learning, interest , organized	38	20.8	39.1
Easy to use, active participation, better results	21	11.5	21.6
Helps in communication, more interesting, gain appropriate skills	26	14.2	26.8
Tertiary students are responsible	2	1.1	2.1
Do not use Instructional media	8	4.4	8.2
Advancement of technology	2	1.1	2.1
TOTAL	97	53.1	100
Did not give reason(s)	86	46.9	
GRAND TOTAL	183	100	

Valid percentages indicate that 87.5% of respondents gave the following reasons: Visual instruction, skills are improved, improved learning, interest, organized, easy to use, active participation of the learners, better results and helped in communicating, learning became more interesting, students gain appropriate skills. 10.3% of respondents gave the following reasons: do not use Instructional media and Tertiary students were responsible enough. 2.1% of the respondents gave the following reason: instructional media as part of advancement of technology.

5.0 Findings

For *Research question three (3)*-88.7% of respondents reported they were other benefits of using instructional media in tertiary education.

Research question four (4)-81% of respondents' perception was that there were some differences in conceptualization among students taught using instructional media from those taught using the traditional ways. 70.7% of the respondents agreed "Students who are taught using instructional media perform better than those students taught using traditional ways." 100% of the respondents agreed instructional media enhanced tertiary students' conceptualization of intended

learning outcomes. 83.6% of respondents' viewed instructional media as providing "motivation, attentiveness, and widening the tertiary students' scope of knowledge."

6.0 Discussion

The purpose of the second objective was, "**To justify and verify, if there is a correlation between instructional media and students' academic achievement, at tertiary level of education.** This objective sought to find out if some relationship exists between instructional media and tertiary students' academic achievement, so as to justify and verify the correlation as seen from the educators' point of view. This objective had two research questions (3) and (4).

Research question three (3) had the following findings: 88.7% of respondents in Botswana **agreed to strongly agreed** that there were some other benefits of using instructional media in the teaching and learning process as opposed to 4.4% of the respondents who **disagreed to strongly disagreed** that there were some other benefits of using instructional media in the teaching and learning process.

Research question four (4)'s findings indicated that: (81%) of respondents in Botswana said that: there were some differences in tertiary students' conceptualization of intended learning outcomes among students taught using instructional media from those taught using the traditional ways, against 6.1% of the respondents who reported that there were no differences in academic performance among students taught using instructional media from those taught using the traditional ways. 70.7% of respondents in Botswana reported that instructional media enhanced tertiary students' conceptualization of intended learning outcomes against 7.5% of the respondents who commented, "The students generally perform the same academically." 3.4% of the respondents commented that "Students who are taught using traditional ways perform better academically."

The valid percentages showed 100% of the respondents in Botswana agreed instructional media enhanced tertiary students' conceptualization of intended learning outcomes, although at different percentile gains. 83.6% of respondents commented that instructional media provided "Motivation, attentiveness, and widened the tertiary students' scope of knowledge." 13.4% of respondents stated that, "Both instructional media and traditional media complemented each other." And 3% of respondents, commented that, "Traditional ways of teaching were better".

7.0 Conclusion

It was therefore concluded for research objective (2) that, from the perceptions of educators, there was a strong, positive correlation between instructional media usage and tertiary students' conceptualization of intended learning outcomes in Botswana. This strong and positive correlation perception is because educators view instructional media having other benefits that assist conceptualization of intended learning outcomes in tertiary students such as; personal researches, effective teaching and learning, illustrations etc. Moreover, the perceptions were that there were some differences up to 50% more or better in tertiary students' conceptualization of intended learning outcomes when taught using instructional media when comparing to students taught using the traditional ways of instruction.

The above evidence further supported and reinforced the strong media effect school of thought. The conclusion above is therefore, in line with the findings of Rutz, Eckart, Wade, Maltbie, Rafter and Elkins (2003), found out that instructional media influence academic achievement of students. Similar to this conclusion of this study are the findings of Peake et al (2005), who also concluded that there is a positive relationship between instructional media integration and students' academic achievement.

8.0 Recommendations

The findings indicated that instructional media enhanced conceptualization of intended learning outcomes. Students who were taught using instructional media performed better than students who were taught in the traditional ways. Therefore, a policy formulation is needed on instructional media and teaching /learning process- since it seems there is no clear policy on the financing, procurement, and use of instructional media at tertiary level of education. Management of institutions should take a lead to make instructional media a priority and key component of effective teaching and learning process at

tertiary level of education in Botswana. This would enhance conceptualization of intended learning outcomes, making teaching and learning to be interesting to tertiary students in Botswana.

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