AN EXPLORATION OF EXPERTS' REACTIONS ON EFFECTIVENESS OF MULTIMEDIA FOR PROSPECTIVE TEACHERS

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ABSTRACT: *As the Technological advancement and digitalization, the scenario of the education is now completely change. The new field emerges in education sector like flipped classroom, smart classroom, it provides new platform to education at every level and transform the classroom teaching learning process. Yet, they are incomplete without the knowledge of multimedia as it is based on multimedia. So, prospective teachers should have knowledge of multimedia. Multimedia is used in delivering lecture not only used in classroom, but also on-line lectures through video conferencing, distance learning and blended learning. But in India, today our prospective teacher's education system is largely conventional and not supported by new technology as multimedia. Education system transformation in the hand of future teachers, so they should be taught through same techniques, which they would be use in their teaching. While moving on the same route, the investigator have developed a multimedia package for prospective teachers on unit-3 of course-1 of B.ED. two-year programmes (2016-18). In the present study, a reaction scale was developed to obtained the response of subject experts on five-point rating scale for various statements regarding validity of multimedia package. The reaction scale was given to experts individually from various educational institution of north India. The results of the investigation revealed that most of the experts favoured the effectiveness of multimedia package (MMP) for teaching prospective teachers. It is also determined that the inclusion of MMP in their classroom teaching is helpful in increasing their learning outcome as well as in improving their attention and developing scientific outlook as in case of present prospective teachers training programme.*

KEYWORDS: Multimedia Package, Reaction Scale, Experts, Prospective Teachers

INTRODUCTION

With extensive augmentation of web technology and expansion of media technology in education, not only recuperate the teachers' ability to execute teaching strategies unify with digital technology but also meet the assorted need of the students' learning. With the rapid expansion of the transmission devices, multimedia has evolved into an essential part of the modern educational programme. Moreover, it has been prevalent and commonly used in the vast number of schools and educational institutions. This teaching method aided in the computer by using the wide-ranging media forms, can efficiently elude and overwhelmed the traditional teaching methods on many shortcomings, while being able to effectively shorten the time and convalesce the condition of teaching and learning effectiveness, to achieve the prime teaching goal. Since teachers are main architect of excellence learning proficiencies among students. Teaching is the only field, where professional teachers are handling the prospective teachers, who will become the next generation teachers. Teachers are responsible to provide required skills and positive attitude necessary for the future teachers. Multimedia education helps the teachers to provide wide range of experiences. One can illustrate the concept through

manipulation of graphics in different dimensions. Graphics, drawing becomes handy for the teacher and the most encouraging thing about it is that whenever the teacher wishes one can modify that particular thing at one's convenience. Those graphics also attracts the student's attention more and on the desired point of concepts with the help of proper data. Teacher can present diagrams and graphs, which help them to understand the concepts clearly with longer effect. Multimedia as a technology-based constructivist learning environment enables students to solve problems by means of self-exploration, collaboration and active participation. Simulations, models and media-rich study materials (still and animated graphics, video and audio) integrated in a structured manner can facilitate the learning of new knowledge. Multimedia learning encourages and enhances peer learning, individual creativity and innovation (Malik & Agarwal, 2012:468). In the multimedia teaching activities, the media technology can dimensionally and visually present the contents which they can't be achieved with abstract language texts. As a result, some teachers in the teaching process emphasize excessively the media technology, while ignoring the dominant position of teachers in the classroom. Course contents are overwhelmed completely by fancy animation and video effects, eventually leading to either information overload of multi-media teaching, or from the traditional 'people filling' to a modern 'electric irrigation'; or messy information, colorful computer screen, being similar to see a film, these can't fully embody the advantages of multi-media teaching. Besides all these advantages it has to give motivation to prospective teachers as learner to design their own programme in according to their time, space and content, unlike other audio-visual devices where the learners have limited option to listen to the dialogues, music etc. or watch the same cartoons movies etc. Variety and diversity according to the taste of the learner is possible through multimedia education which makes the student teachers to get involved in the process of educational programme. More over the result of the analysis are in consonance with the findings of (Gupta & Nagpal, 2013; Sharma & Kiran, 2012, Sharma & Khakhra, 2009) who revealed that most of the experts are in the favour of effectiveness of multimedia package for B.ED. students and smart classroom teaching (Gupta& Singh, 2016).Teacher educators possessing good and poor knowledge of ICT differ in their attitude towards teaching ICT and teacher educators with good knowledge of ICT have more favourable attitudes towards teaching ICT; Male and female teacher educators do not differ significantly in their attitude towards teaching ICT; teacher educators from private unaided colleges were found to have more favourable attitude towards teaching ICT and in last a significant difference was found in the attitude of high experienced and less experienced teacher educators towards teaching ICT teacher educators with less experience had a more favourable attitude towards teaching ICT than teacher educators with more experience.(Sheela and Talawar, 2006). Additionally, Suman (2009) also found that experts have favourable response towards different aspects of E-Content. Madan (2009) revealed that multimedia teaching programme is helpful in strengthening students' achievement and found 80% of the teachers agreed for the effectiveness of multimedia teaching programme. ICT and its innovative technologies supply for enriched approaches for meaningful learning (Shah & Khan, 2015). All these studies given above revealed that most of the subjects' experts have favourable attitude towards multimedia teaching programmes. Hence, the investigators endeavour to undertake the present study to seek the reaction of subject experts for the effectiveness of Multimedia teaching package for Prospective Teachers.

Objectives of the Study

The present study is designed to realize following objectives:

1 To develop Multimedia Package for Prospective Teachers (Unit-3 for Course-1 of B.ED. two-years programme (2016-18)).

2 To develop Multimedia Package Reaction Scale for Teachers & Experts (MPRSTE).

3 To analyse the reaction of experts in MPRSTE towards the effectiveness of multimedia package for prospective teachers.

Design of the Study

I. Method used: In the present study, Descriptive survey method was used to collect the data.

II Sample: In order to obtained the reaction of the subject experts on various statements regarding validity of the multimedia package, the reaction scale was given to 20 subject experts individually from various educational institutions of north India. These subject experts include

Subject teachers from education colleges, teacher working in Department of Education and teacher educators working in the field of ICT from various educational institutions of north India. The personal information of subject experts /subject teachers related to age, gender, educational & professional qualification, experience, subject & class taught, and teaching aid used in classroom was extracted from part-A of reaction scale -MPRSTE. The general information of sample of experts and teachers is presented in percentage of frequency and shown graphically with help of pie charts in table1.

Table-1. **General Information of the sample of Experts (Analysis of Part-A of Reaction Scale -MPRSTE)**

General Information of the Experts	Groups	Frequency + %age		Pie Chart
		No. of Experts / Teachers	% of Experts / Teachers	
GENDER	Male	07	35%	
	Female	13	65%	
		20	**100%**	
AGE GROUP	<30Years	02	10%	
	31-40 Years	14	70%	
	>40 years	04	20%	

	Total	**20**	**100%**	
TEACHING EXPERIENCE (years)	<5 years	8	40%	
	5-10 years	7	35%	
	>10years	5	25%	
	Total	**20**	**100%**	
TEACHING AID USED	Using ICT aids	11	55%	
	Not using ICT aids	9	45%	
	Total	**20**	**100%**	
PROFESSIONAL & EDUCATIONAL QUALIFICATION	Ph. D.	11	55%	
	M.Phil.	09	45%	
	Total	**20**	**100%**	

As shown in table 1, the total number of experts who elicited reaction for the validation of multimedia package were 20 out of which 13 females (65%) and 07 were males (35%). It was also found that 02 experts (10%) were belong to age group below 30 years, 14 experts (70%)were belong to age group between 31-40 years and only 04 experts (20%) were above 40 years age group. With respect to teaching experience, it is apparent that there were 08 experts (40%) were having below 5 years' experience, 07 experts (35%)were having 5-10 years' experience and 05 experts (25%) were having more than 10 years' experience. It revealed from the table 1 that regarding using teaching aid in classroom that 11 experts (55%) were using ICT as teaching aid in the classroom and 09 experts (45%) were not using ICT in the classroom as teaching aid. It was analyzed regarding professional and educational qualification that 11 experts (55%) were having Ph. D. degree and 09 experts (45%) were having M.Phil. degree.

III   Tools Developed

- **Multimedia Package Reaction Scale for Teachers & Experts (MPRSTE):**

Regarding the validation of multimedia package developed by investigator, reaction scale for experts / teachers -MPRSTE developed by investigator. To get response of experts / teachers on effectiveness of multimedia package, the reaction scale -MPRSTE with 5-point rating scale having 30 statements divided into four broad areas: **Content Presentation & Design (7 statements); Technological & Multimedia Aspect (5 statements); Motivation for Students (10 statements) & Usability for Teachers (8 statements**). The method of assessment of each parameter is based on five- point scale: **SA (**Strongly Agreed); **A (**Agreed); **UD (**Undecided); **DA (**Disagreed) & **SDA (**Strongly Disagreed). Content Validity of the scale was established after having opinion from the subject experts. All the statements of the scale are positively worded and are given a score of '4 to 0' for strongly agree to strongly disagree. The sum of these value gives the effectiveness of developed multimedia teaching package for prospective teachers. The total score from varies from 0 to 120 showing the least effectiveness to highest effectiveness of multimedia instructional package.

- **Multimedia Package for Prospective Teachers (MPPT):**

MPPT was developed by investigator by taking into consideration the stages of the ADDIE design model and was developed on unit-3 'Theoretical Perspective to enhance Learning among children and adolescent' which is included in the B.Ed. two-year (2016-18) course-1: Childhood & growing up for B.Ed. First year students. Multimedia package components like picture, video, audio, animation and text developed by using different software and technological tools like Microsoft Office (MS office 2013), EDIUS, Swish MX- 2, Adobe photoshop 7.0, Flash 7.0 etc. The package was prepared as per the syllabus prescribed by NCTE for B.Ed. two-year programme.
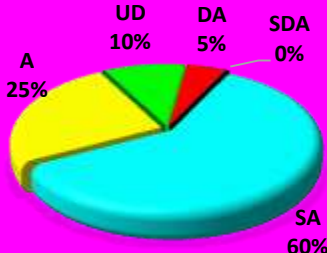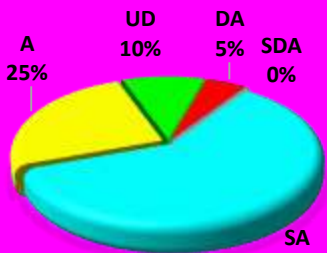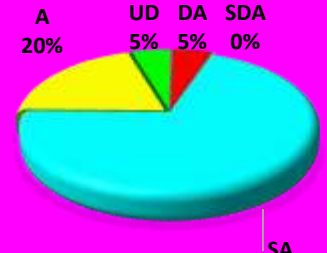
IV   Statistical Techniques applied

Frequency and percentage analysis had been employed on reaction analysis of the subject experts for the effectiveness of multimedia.

Analysis and Interpreation

The MPRSTE was given to 20 experts and their reaction was sought on the various aspects of multimedia package for prospective teachers. For analysis of reaction of experts towards 30 statements related to 4 aspects on five-point scale regarding the effectiveness of the multimedia package for prospective teachers, area -wise deep analysis has also been done to know the acceptance of multimedia in more explanatory way. The reaction of experts is presented in the forms statement-wise percentage and pie chart in table 2, 4, 6 & 8 and overall percentage of each area-wise reaction of experts has been presented in table 3,5,7 & 9 and overall reaction of expert shown area wise graphically as pie chart in figure 1, 2,3 & 4.

Table 2. Statement-wise Depiction of Reaction of Experts on the Effectiveness of Multimedia Package with respect to "Content Presentation and Design"

Sr. No.	STATEMENT	SA	A	UD	DA	SDA	Pie Chart
A	**CONTENT PRESENTATION & DESIGN**						
A.1	The Content of Multimedia Package is as per the syllabus prescribed by NCTE for B.Ed.-2 years programme Course-1: Childhood & Growing up.	13 65%	03 15%	03 15%	01 5%	00 0%	
A.2	Topics chosen are well explained in the package.	13 65%	04 20%	02 10%	01 5%	00 0%	
A.3	The Multimedia package makes the content understandable.	14 70%	03 15%	02 10%	01 5%	00 0%	
A.4	The content matter as well as language is as per the students' level.	13 65%	04 20%	02 10%	01 5%	00 0%	

A.5	Assembling and ordering of the learning content is logical, valid & systematic.	12 60%	05 25%	02 10%	01 5%	00 0%	
A.6	Main- topics and sub-topics are organized appropriately.	12 60%	05 25%	02 10%	01 5%	00 0%	
A.7	Examples used are simple and relevant to understand the content.	14 70%	04 20%	01 5%	01 5%	00 0%	

The statement wise analysis of first aspects (Content Presentation & Design) of multimedia package as given in Table 2 exposed that more than 85 % of the subject experts strongly agreed & agreed that the content and design of multimedia package is appropriate in terms of content, explanation of topic, language, well explained sub- topics, logical & systematic structuring and understand content with the help of relevant, simple examples. Experts strongest agreement (SA = 65% and A= 20%; overall = 85% agreement) was seen with the well explanation of the topics chosen in the package. Next, they have accepted assembling and ordering of the learning content is valid and systematic (SA= 60% and A= 25%; overall = 85% agreement) and explanation is well annexed with relevant and simple examples (SA= 70% and A= 20%; overall = 90% agreement).

Table 3. Experts Overall Reaction on Effectiveness of Multimedia Package with respect to "Content Presentation & Design"
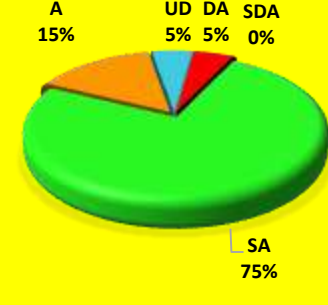
Rating by Experts	SA	A	UD	DA	SDA
Content Presentation & Design (in %)	65%	20%	10%	5%	0%
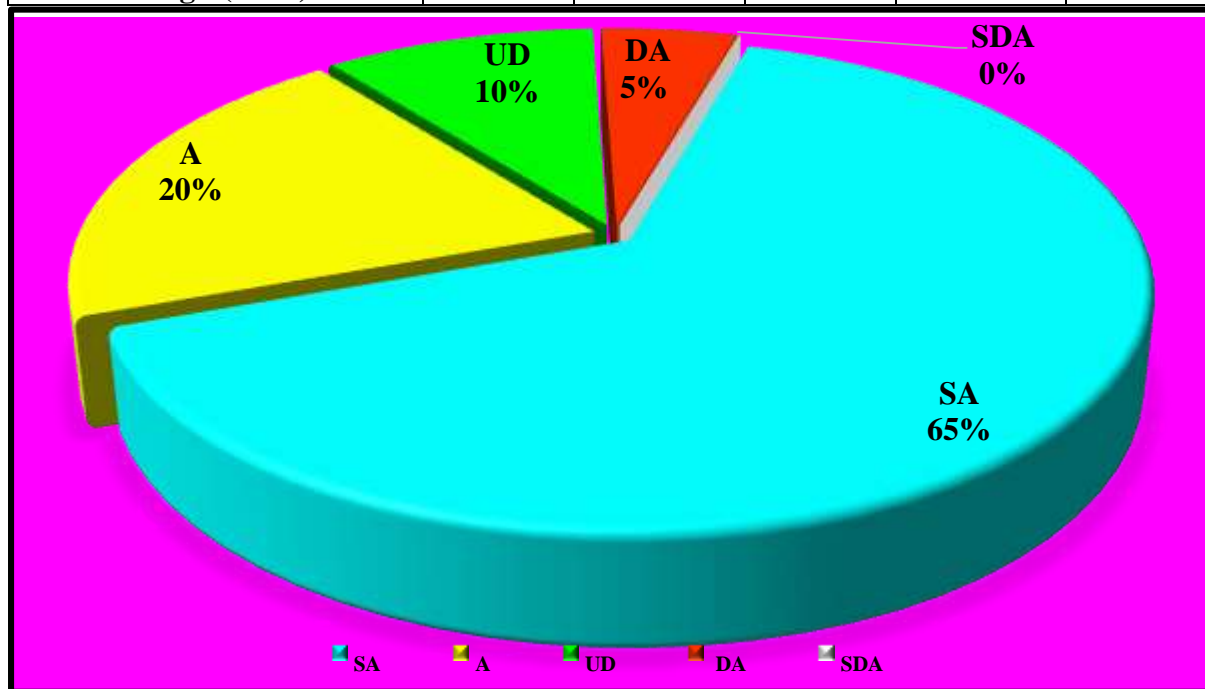
Fig 1: Experts Overall Reaction on Content Presentation & Design

It can be interpreted from table 3 and figure1 that 85 % (SA= 65 %; A= 20%) experts given agreement and 5% experts were disagree and remaining 10 % experts were undecided about the statement given in scale in first aspect. In fact, experts appreciated the efforts to elaborate the complex theories of learning in simple manner. Overall the content presentation and design highlighted the acceptance of Multimedia Package on learning for prospective Teachers.

Table 4. Statement-wise Depiction of Reaction of Experts and Teachers on the Effectiveness of Multimedia Package (MMP) with respect to "Technology and Multimedia Aspects"

Sr. No.	STATEMENT	SA	A	UD	DA	SDA	Pie Chart
B	**TECHNOLOGICAL AND MULTI MEDIA ASPECTS**						
B.1	Amount of animation, audio, visual and other such material used in appropriate proportion and as per the requirement of the subject matter.	12 60%	05 25%	02 10%	01 5%	00 0%	
B.2	The colourful and animated pictures helped us to develop our interest in content.	14 70%	04 20%	01 5%	01 5%	00 0%	
B.3	The colour of the backgrounds, resolution & choice of format of slides for different topics are attractive.	13 65%	03 15%	02 10%	02 10%	00 0%	
B.4	The multimedia package is quite stimulating, remarkable& interesting	16 80%	02 10%	01 5%	01 5%	00 0%	

| B.5 | All the components of multimedia as pictures, text, graphics, video, audio and animation have been used effectively to enrich learning experiences. | 15 75% | 03 15% | 01 5% | 01 5% | 00 0% | |

The statement wise analysis of second area of multimedia package "Technological and Multimedia Aspects" having statements which assess the multimedia technicalities. Table 4 exposed that experts satisfied with the proportion of animation, audio and video components, pictures according to subject (SA= 60%; A= 25%).Overall strongest agreement was elaborated towards the colourful and animated pictures and extent of animation used in multimedia package (SA= 70; A= 20) and slide format, resolution and choice of background colours (SA=65% and A= 15%). Expert shown support to stimulating, remarkable and interesting factors of multimedia package (SA=80% and A= 10%). Multimedia component as text, picture, video, graphics, audio and animation used effectively to enrich the learning experiences (SA=75% and A= 15%) were also appreciated by experts.

Table 5. Experts overall Reaction on Effectiveness of Multimedia Package with respect to "Technological and Multimedia Aspects"

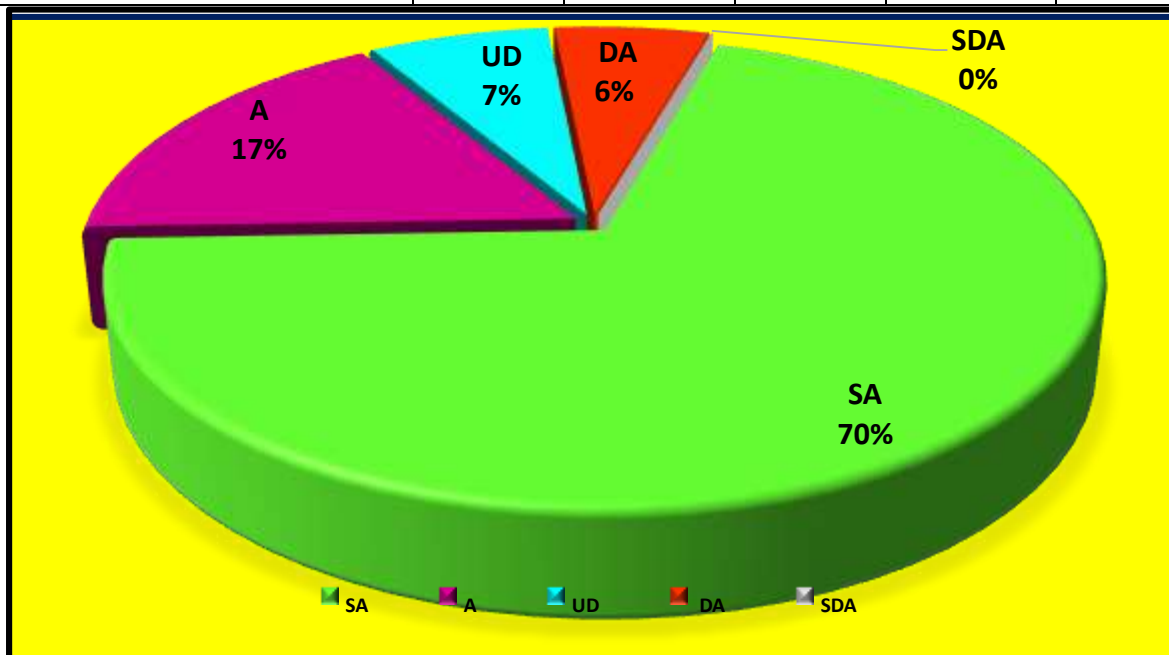| Rating by Experts	SA	A	UD	DA	SDA
Technology and Multimedia Aspects (in %)	70%	17%	7%	6%	0%

Fig 2: Experts Overall Reaction on Technological & Multimedia Aspects

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It can be elucidated from table 5 and figure 2 that 87 % (SA= 70 %; A= 17%) experts given strongest agreement on technological and multimedia aspects and only 7% experts were disagreed and remaining 7% experts were undecided about the statement given in scale regarding technology used in multimedia package. In fact, experts satisfied with the use of multimedia component as graphics, pictures, animation and colour combination, resolution, concept map in multimedia package. Expert agreed that multimedia package is quite stimulating, remarkable and helps in elaborate the learning in simple manner for prospective teachers.

Table 6. Statement-wise Depiction of Reaction of Experts on Effectiveness of Multimedia Package with respect to "Motivation for Students"

Sr. No.	STATEMENT	SA	A	UD	DA	SDA	Pie Chart
C	MOTIVATION FOR STUDENTS						
C.1	The Multimedia package motivates students learning efficiently.	13 65%	04 20%	02 10%	01 5%	00 0%	
C.2	It helps in improving student's academic performance.	13 65%	03 15%	03 15%	01 5%	00 0%	
C.3	The package can enable the students to grasp and recollect all the theories easily by virtual demonstration of theories	14 70%	03 15%	02 10%	01 5%	00 0%	

C.4	**Multimedia package is helpful in removing the anxiety among learners and thereby strengthens their base.**	12 60%	04 20%	02 10%	01 5%	01 5%	
C.5	**Prospective Teachers would be able to apply the knowledge to real life situation.**	12 60%	06 30%	01 5%	01 5%	00 0%	
C.6	**It engages the students in activities that allow them to imagine.**	13 65%	05 25%	02 10%	00 0%	00 0%	
C.7	**It captures the interest of students and improves their attention.**	13 65%	04 20%	02 10%	01 5%	00 0%	
C.8	**It can develop the scientific outlook among the Prospective Teachers.**	12 60%	04 20%	03 15%	01 5%	01 5%	

| C.9 | It inspires prospective teachers to use the multimedia technology in their classroom teaching. | 14 70% | 03 15% | 02 10% | 01 5% | 00 0% | |
| C.10 | It saves time and energy of students to understand the concepts. | 14 70% | 03 20% | 01 5% | 01 5% | 01 5% | |

When a multimedia package is developed then it should be ensured that it should be made teaching and learning exciting, so that it could capture the attention of the students as well as the learner. Apart from this, it should be motivating for the prospective teachers, as they encouraged to use it as better teaching aid. The third part of this reaction scale was also use as to assess the motivational aspect of multimedia package. The statement wise analysis of third aspects (Motivational for students) of multimedia package on reaction scale is given in Table 6 revealed that 85 % (SA = 65% and A= 20%) subject experts/ teachers strongly agreed that package motivated learning, capture interest of students, improves attention and developed scientific outlook among students. Also 80 % (SA = 60% and A= 20%) subject experts have acknowledged the improving performance, removing anxiety, strengthening base of student. It is further interpreted that 85% (SA = 70% and A= 15%) subject experts agreed that multimedia package helps students to grasp and recollect all the theories by virtual demonstration and a source of inspiration for prospective teachers. Next, 90 % experts have accepted that it is a tool which allow imagination, application of knowledge and save time and energy of students in understanding of concepts. (SA= 70% and A= 20%).

Table 7. Experts Overall Reaction on Effectiveness of Multimedia Package with respect to "Motivation for Students"

Rating by Experts	SA	A	UD	DA	SDA
Motivation for Students (in %)	65 %	19.5%	9.5 %	4.5%	1.5%

The data shown in table 7 and figure 3 that the motivation aspects of multimedia package accepted by the educators with a high percentage of 85 % (SA= 65 %; A= 20%) experts in agreement and 6% (DA = 4.5% and SDA= 1.5%) experts were disagreed and remaining 9 % experts were remained undecide. Overall the response on aspects motivation for students highlighted the acceptance of multimedia package on learning for prospective teachers
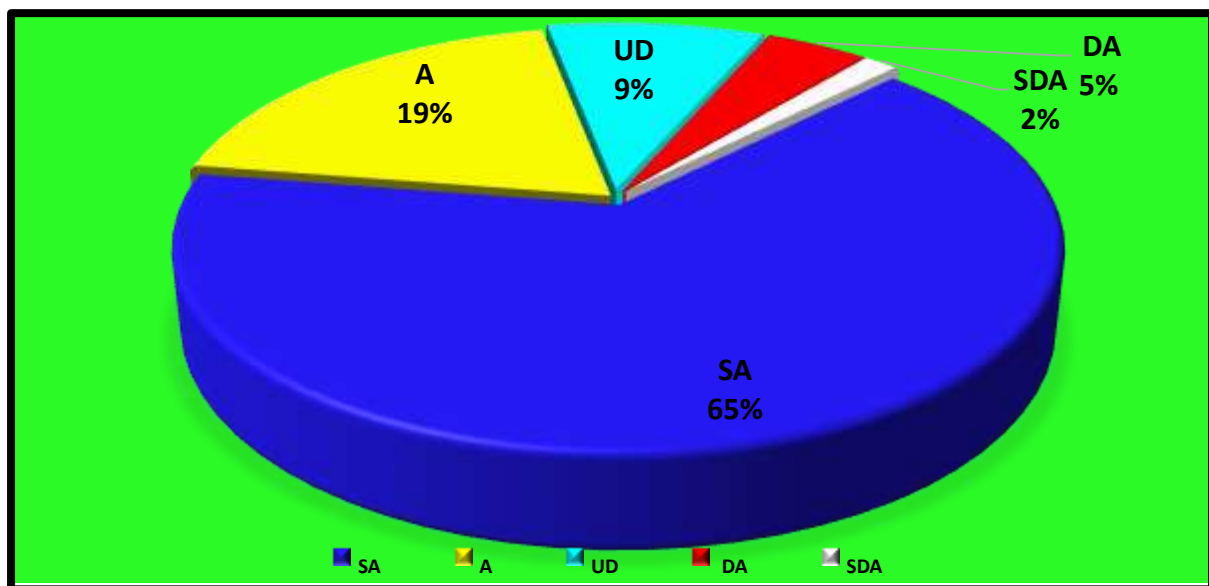

Fig 3 Experts Overall Reaction on Motivation for Students

Table 8. Statement-wise Depiction of Reaction of Experts on the Effectiveness of Multimedia Package with respect to "Usability for Teachers"

Sr. No	STATEMENT	SA	A	UD	DA	SDA	Pie Chart
D	USABILITY FOR TEACHERS						
D1	Teacher can easily elaborate the complex concepts through this Multimedia Package.	13 65%	04 20%	03 15%	00 0%	00 0%	
D2	It helps the teacher in maintaining the proper decorum in classroom.	14 70%	02 10%	03 15%	01 5%	00 0%	
D3	It hosts the teacher with the innovative techniques of teaching and learning.	14 70%	04 20%	02 10%	00 0%	00 0%	
D4	It saves time and energy of teachers to make the students understand the concepts.	15 75%	03 15%	00 0%	02 10%	00 0%	

D5	Teacher can easily make the revision of important points as and when required.	14 70%	02 10%	02 10%	02 10%	00 0%	
D6	It makes easy for the teacher to visualize different academic activities in the classroom.	13 65%	03 15%	03 15%	01 5%	00 0%	
D7	Teacher can evaluate learning progress of students frequently and take feedback effectively through the package.	15 75%	03 15%	01 5%	01 5%	00 0%	
D8	It has changed the role of the teacher from authoritative leader to a supportive guide and facilitator.	14 70%	03 15%	02 10%	01 5%	00 0%	

As far as the usability for teacher is concerned the tables 5.3.8 revealed that 85% (SA= 70% ,A= 15%)of subject experts have favourable acknowledgement regarding the usability for teachers as it helps the teacher to elaborate complex concepts (SA= 65% A= 20% experts agreement), to maintain the proper decorum in classroom,((SA= 70%, A= 10% experts reaction), , hosts the teacher with innovative techniques (SA= 70%, A= 20% experts views), save teacher time and energy(as experts SA= 75% and A= 15%), helps in revision of important points(SA= 70% and A= 10% experts shown). 90% Experts (SA= 75%, A= 15%) have accepted that it helps teachers frequently evaluate the learning progress of students and get immediate feedback from students, it evident that 90% (SA= 70%, A= 15%) experts admitted that it switches the role of the teacher from authoritative leader to a supportive guide and facilitate.

Table 9. Experts overall Reaction about Effectiveness of Multimedia Package with respect to "Usability for Teachers"

Rating by Experts	SA	A	UD	DA	SDA
Usability for Teachers (in %)	70%	15%	10%	5%	0%
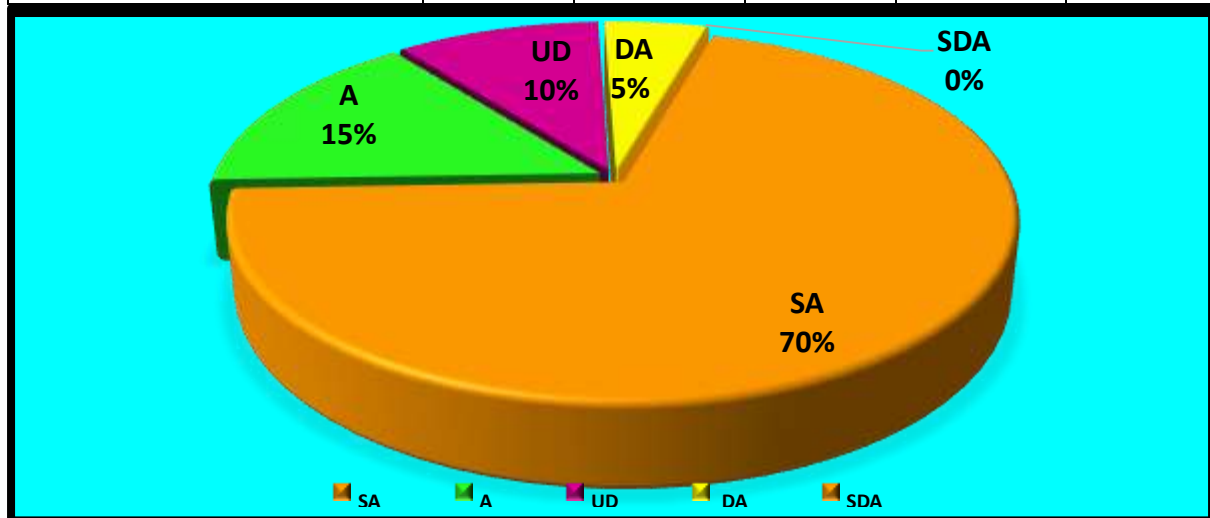
Fig 4: Experts Overall Reaction on Usability for Teachers

It can be interpreted from table 9 and figure.4 that 85 % (SA= 65 %; A= 20%) experts agreed and 5% experts were disagreed and remaining 10 % experts were undecided about the statement given in scale related to fourth aspects. In fact, the analysis revealed that it is highly useful for teachers and modify the role of teachers and an important weapon for teaching and should be include in routine classroom. Overall reaction obtained from experts regarding effectiveness of multimedia package has been indicated on reaction scale that most of the experts approved the multimedia package. It presented in table 5.3.10 and in form of pie chart in fig. 5.

Table 10. Overall Reaction of Experts about Effectiveness of Multimedia

Rating by Experts	SA	A	UD	DA	SDA
Total Reaction (in%)	67.50%	17.9%	9.1 %	5%	0.5 %
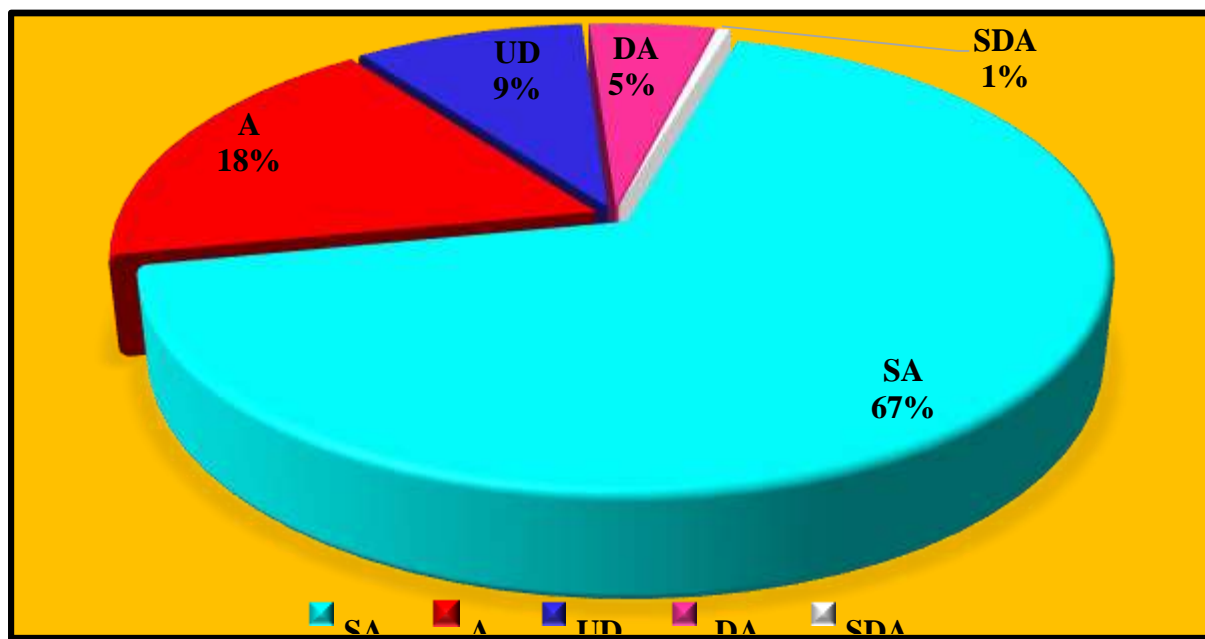
Fig .5: Inclusive Reaction of Experts about Effectiveness of Multimedia Package

It can be interpreted table 10 that overall 85.40% (SA=67.50% and A=17.9%) of experts agreed that this multimedia package for prospective teachers in "Theoretical Perspective of Learning among children and adolescents" developed by investigator is effective and convenient enough for using in classroom teaching learning situation for better learning outcome and improve the attention of students. Only 5.5% (D.A.=5% and S.D.A.=0.5%) of experts were disagreed and 9.1 % of experts were undecided about the effectiveness of the multimedia package. Furthermore, it was also revealed by the expert's reaction that it is highly useful for teacher as well as students and inseparable part of today 's education system.

CONCLUSION

The present study was carried out for the opinion of the experts towards the effectiveness of the multimedia package for prospective teachers. It was found that they felt that the content of multimedia package strictly based on the syllabus, so teacher educators found it convenient to use and visuals are catchy; animation effect was impressive and capable of sustaining the

interest of the learners. The experts and teacher educators suggested that some technical training must be given to teacher educators to handle computers and other related assets. Prospective teachers should be involved in the development of the Multimedia package and some provision should be made in the curriculum for developing these types of projects as interest generated among the prospective teacher. Experts appreciated the efforts done by the researchers in making videos and they are adding some more animation effects as used in multimedia package.

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