

Importance of ICT in Education for Gifted Students

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Abstract Gifted and talented children are those who are identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and services beyond those that are normally provided by the regular school program in order to realize their contribution to self and society (Marland, 1972). A gifted child in the regular classroom may be the only child in the room; hence, he or she will not have the opportunity to learn with others of like ability. ICT can provide opportunities for students to develop and practice higher level thinking skills. The gifted students are spread around the world and ICT makes it possible that gifted students communicate with other gifted students all around the world. ICT can be used to acquire that type of knowledge which can satisfy the needs of the gifted children. So, the purpose of this paper is to determine the use of technology in education for the learning of gifted and talented students.

Keywords: ICT and Gifted students.

1. INTRODUCTION

Gifted children are the assets of incalculable value to the society. But they are the forgotten students in the class. The teacher, generally, in regular classroom cannot take care of gifted children along with the average and the below average. Consequently, these children are simply neglected (Sahu, 2010). Gifted students have always been considered as students who are at the upper end of the bell curve in academic abilities. At this upper end, the bell curve tail can continue for a considerable distance representing increasingly extreme difference (Peterson, 2006).

2. IDENTIFICATION OF GIFTED STUDENTS

Galton (1822-1911) devoted much of his professional career to the development and use of tests and statistical analysis methods to study intelligence and other

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measurable aspects of people. Giftedness may be defined by a score on a general IQ test now days, e.g. L.M. Terman, in his famous study of 1,528 gifted children, set an I.Q. 140 as the lower limit of giftedness (Sahu, 2002). High intellectual potential goes through all definitions of gifted person. So, high intelligence quotient has been fixed as the criterion for giftedness.

The following is the table indicating the relationship between I.Q. and the degree of brightness. The table is based on the studies by Terman-Merrill Revision.

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Source: Education of the Exceptional Children by Sahu (2002)

| IQ Range | Classification |
|-----------------|-----------------------|
| 140 -169 | Very superior |
| 120-139 | Superior |
| 110-119 | High average |
| 90-109 | Normal or average |
| 80-89 | Low average |
| 70-79 | Borderline defective |
| 50-69 | Morone |
| 25-49 | Imbecile |
| 0-24 | Idiot |

But today, there is no formula to identify gifted students. Ultimately I.Q along with the teacher's knowledge about characteristics of gifted students, insight and wisdom are more important for the identification of gifted students. He is in the better position than anyone else to observe the classroom behavior of children. In order to make teacher's observation more systematic teacher should know about characteristics of gifted students.

An important characteristic of gifted students is:

- They have a wide range of interests.
- Secure emotionally.
- Good guesser.
- Achieves good grades in most of the subjects.
- Learns rapidly, easily and efficiently.
- Has a long attention span in areas of interest.
- Likes or loves one or a few areas of knowledge.
- Likes to study some subjects more than others.
- Readily guesses and makes hypotheses.

- Juggles or redefines elements of a problem or task.
- Can show intense concentration on a task.
- Retains own ideas in a discussion or collaboration.
- Provides multiple solutions or responses to problems.
- Intellectually playful.
- Always trying to adapt or improve things.
- Has a keen sense of humour.
- Humour in situations others don't.
- Specific academic aptitude.
- Creative thinking and production.
- Leadership.
- Psychomotor ability.
- Visual and performing arts.¹

According to the National center for research for the education of gifted and talented children and youth (2007), gifted elementary students have mastered between 40 and 50 percent of the school year's content in several subject areas before the school year begins. But when they spend the time in school they do not enable them to fulfill their intellectual potential. As schools look to improve the performance of low achievers, often the performance of gifted students is ignored. The reality is that many gifted students are not exposed to a challenging curriculum. Lacking academically rigorous curricula, many gifted students fail to develop critical study skills or the perseverance to attain high achievement.

3. UNDERACHIEVEMENT AMONG GIFTED CHILDREN

Exceptionally intelligent students face a variety of problems in ordinary classrooms. They often are ostracized as being different and weird and are labeled as nerds and geeks (Silverman, 1993a, 1993b). Pupils with a particular academic gift or an exceptional talent in a specific area can experience frustration with school if their abilities are not sufficiently recognized and appropriate provision made. One of the biggest issues today in both gifted and regular education is underachievement. Gifted students are one group of exceptional learners who are not normally considered at risk for academic failure or problems. It is estimated that 15-40% of identified gifted students are at risk of academic failure or performing far below their academic potential (Seeley, 1993). Gifted students then acquired some negative characteristics:

¹ Retrieved August 31,2012 from <http://austega.com/gifted/9-gifted/22-characteristics.htm>

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|---|---|
| Negative characteristics (Davis & Rimm, 998) (Often exhibited by gifted underachievers and students with a learning disability) | <ul style="list-style-type: none">• Stubbornness• non-participation in class activities• Uncooperativeness• Cynicism• Sloppiness and disorganization• A tendency to question authority• Emotional frustration• Absent-mindedness |
|---|---|

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To overcome this problem teacher should use ICT in classrooms so that students can exhibit an exceptionally high degree of motivation, and/or excel in specific academic fields.

4. MEANING OF ICT

It is important to remember that ICT does not just mean computers – it covers broad range of learning technologies found in schools. These rning technologies will store, retrieve, manipulate, transmit or receive information electronically in a digital form. For example, personal computers, digital television, email, robots etc. ICT (Information and Communications Technology) includes computers of all the kinds currently used in schools, the information available via the Internet; all related software, e.g. programs, CD-ROMs; all available and/or related ICT hardware, e.g. headphones, tape recorders, TV, radio, video recorders; and all potentially useful communications technology, e.g. the communications possible via the Internet, video and computer conferencing, intercom systems, etc.² Gifted students require a mode of education similar to the approach used by classical humanists. Instead of superficially investigating a topic, students were encouraged to explore information thoroughly. Through exploration, they would become highly engaged and pursue a deeper understanding (Eide & Eide, n.d.). So, ICT is very useful for this purpose.

5. GIFTED CHILDREN ACCORDING TO ICT

Freedman (2013) in the article ‘Working with the more able in ICT’ describes that we could simply take the children who are really good at English and Mathematics and ignore the rest, and you’d probably end up with a relatively small group of pupils designated as ‘Gifted and Talented’. But, this is likely

² Retrieved August 8, 2012 from <http://www.brookes.ac.uk/schools/education/rescon/cpdgifted/docs/secondarylaunchpads/13ict.pdf>

to be wrong approach – in the sense that we would not necessarily end up with the *most* gifted and talented youngsters in the group. Gifted underachiever who hardly ever communicates might be absolutely brilliant in a particular area of ICT. Freedman (2013) explains about the examples of pupils who have done outstanding – and perhaps surprisingly – well in ICT include:

- Daniel, an autistic boy who hardly spoke, but who became the go-to person in the Year group for advice on video editing;
- Jane, a deaf and dumb pupil who discovered hidden talent as a news reader using sign language when taking part in a multimedia project.

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So, the gifted children in ICT are those:

- 1 Who has a special aptitude in their use of one or more kinds of ICT and can use their abilities in other areas and subjects could benefit from a use of ICT³.
- 2 Can learn and apply the new ICT techniques and can use the shortcut keys for routine tasks effectively and quickly e.g. they quickly apply techniques for integrating applications such as mail merge and databases. As the intellectual ability of gifted children is high so they always try to take the benefit of positive transfer of learning. So, they can apply the ICT skills and techniques confidently in new contexts.
- 3 Initiate ideas and solve problems, use ICT effectively and creatively, develop systems that meet personal needs and interests. For example, they create an interactive fan club website that sends out a monthly newsletter to electronic subscribers (either working on their own, or collaboratively with peers)⁴.

6. ICT AND GIFTED CHILDRENS

It should be the challenged for the Able pupils to decide for themselves when and whether to use ICT, how, why, and for what purposes; i.e. they should be encouraged to use it selectively and thoughtfully.

- **Access to experts:** ICT can help to speed up the pace of highly able pupils' learning. ICT can offer access to experts (e.g. via the Internet or conferencing, for example the video conferencing possible with the Motivate Project founded by NESTA, which offers mathematics challenges set by ex-Cambridge professors); it can provide expertise and information

³ Retrieved August 29, 2012 from <http://www.brookes.ac.uk/schools/education/rescon/cpdgifted/docs/secondarylaunchpads/13ict.pdf>

⁴ Retrieved August 28, 2012 from <http://www.teachingexpertise.com/articles/enhancing-provision-gifted-users-ict-9932> (Enhancing provision for gifted users of ICT)

at a much higher level than what may be available amongst able pupils' peers or in their classrooms.

- **Local and networked communication** (e.g. databases, e-mail, the World Wide Web) provide valuable opportunities for collaborative learning for all pupils, including the most able. There are several examples of the positive effects that networked communication can have on pupils' learning⁵.
- **Provide challenges to use ICT:** To maximize the gifted learner's potential, diverse visual, spatial, verbal, and sensory areas of the brain must be coordinated. By using cognitive strategies, students are able to sort, analyze, and apply information. Challenging, high interest material provides the impetus for students to enjoy learning simply based on the process and stimulation (Burney, 2008). Studies show that gifted students, who are not exposed to a challenging educational experience, often regress in their ability to think critically and analytically (Renzulli, 2005). The results of a study by Nikolova and Taylor (2003) confirm that when gifted students are challenged they exhibit gains in their academic performance. When given opportunities to problem-solve and think critically, their educational experiences are enriched. Gifted students who are permitted latitude in topic selection and in their learning environment showed academic improvement. Dixon, Cassidy, Cross and Williams (2005) found that gifted students produced a greater amount of text and higher critical thinking scores on computer-generated versus hand-written writing samples.
- **Easy access at home:** For children with specific talents, an ICT learning environment can be created at home, making it easier for them to develop their abilities whilst also maintaining their general education. Children in the primary age group particularly benefit from this, as they may not be able to attend a specialist school. Resources such as CD-ROMs, on-line information and the Internet offer a wealth of material in readily accessible form which can be matched to Guidance pupils' individual needs and enable them to develop a higher level of skill in thinking and handling information. So, Information and communications technology (ICT) will be playing a large part for gifted as it can be used to assist the gifted children both in and out of school which facilitate or take their energy to the positive side.
- **ICT helps to improve their social communication:** It helps to improve social communication and assist their relationships with other children, teachers and parents because it can enable a child to remain in their own

⁵ Retrieved September 1, 2012 from <http://www.brookes.ac.uk/schools/education/rescon/cpdgifted/docs/secondarylaunchpads/13ict.pdf>

age group and help to relieve peer pressure. Regional or national ICT networks can give the gifted children the broader base of communication for the different cultural background which may reduce the problem of isolation as there are often only a small number of such pupils in a class or even in a school. E-mail or conferencing systems can be used to link these children, so that they can exchange ideas and feel less isolated.

- ***ICT is helpful for teachers of gifted children:*** The National Association for Able Children in Education (NACE), the Support Society for Children of Higher Intelligence (CHI), and the National Association for Gifted Children (NAGC) are some high ability forums which help the teachers of gifted children for provide the networking of teacher links with projects and the Web sites of organizations dedicated to Gifted children⁶.
- ***Use of Smart Board:*** It is also a part of the technology which is helpful for the academic growth of gifted students. Touch-sensitive screens are mounted on the wall of the classroom and a projector shows information that can be manipulated and displayed with unlimited capabilities. The advantage of Smart board technology is its design for use in a spacious work area with group interaction where the gifted children can interact with other gifted children. Participants become both visually and physically engaged as they connect with electric content and multimedia in a collaborative learning environment (Smart Technologies, 2004). Using special pens, students and/or teachers write directly on the screens. They can manipulate text and images, view websites, cut and paste research information, view video clips, formulate graphs and charts, and design vivid and creative presentations. Students combine their cognitive and physical abilities to interact with Smart Board technology⁷.
- ***Arouse the curiosity:*** gifted children have a burning desire to explore and to know. Any phenomenon they come across in their environment may arouse their curiosity. They touch it and feel it. Their conversation is filled with questions such as ‘why’ and ‘how’, etc. Gifted children’s questions show their superior capacity for observing and thinking (Rao, 2003). ICT is very helpful for this purpose. Pupils will engage in online discussion to take part in discussion on topics of interest among the classmates.
- ***Support for Gifted and Talented children with a learning difficulty or disability:*** ICT can help Gifted and Talented children realize their potential

⁶ Retrieved August 30, 2012 from <http://tim-brosnan.net/ITPGCE/coursematerials/SEN/docs/gtchild.pdf>

⁷ Retrieved September 2, 2012 from <http://digitalcommons.liberty.edu/cgi/view-content.cgi?article=1424&context=doctoral>

where they have a specific learning difficulty or disability. Pupils with dyslexia, for example, can overcome barriers by using a voice dictation system or talking word processor and a spell checker. Assessment software can be a valuable aid in early identification of difficulties (Becta, 2001).

- **Reduce the peer pressure:** As children develop into adolescents, the amount of time they spend with their peers increases relative to that spend with their parents and other adults. Peer pressure is defined as when people of your own age encourage or urge you to do something or to keep from doing something else, no matter if you personally want to do it or not. Adolescents tend to spend more time with their peers and have less adult supervision. But, using the ICT the child may work under the supervision of his teachers and parents which results in the reduction of peer pressure.

7. CONCLUSION

To utilize the brain more effectively, gifted and talented students should be given the opportunity to process information. Schools need to ensure that these intellectually gifted pupils can develop their abilities in a range of areas in order to develop the skills; and also to be able to apply these skills in other aspects of learning. For the proper use of ICT in schools, the schools need to maintain regular communication with parents to ensure that any programmes designed to support gifted and talented children acknowledge the social and emotional maturity of the child. Children may also have abilities, such as advanced social skills and leadership qualities, learning to support whole-school improvement; teachers and staff should support the gifted children for the use of ICT for other class students so that their qualities and abilities can be utilized. Part of the role of schools is to prepare young people for the world of tomorrow. Co-operative encouragement can now be given to this aspect of children's education through the use of ICT, which should result in the discovery and encouragement of these abilities in more gifted children.

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