"Media is Not the Devil" : An Interview Study with Experts to Inform Children's Educational Media in India

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Abstract

Objectives: This qualitative study conducted in India examines the implications and challenges of using media to enhance early childhood education.

Methods: In-depth interviews occurred in Delhi and Mumbai with eleven experts. Eligibility required that experts have direct experience with young children or have participated in the creation and/or production of young children's content on different media platforms. Two research questions guided thematic analysis around the uses, challenges, and scope of media for young Indian children. These questions were: 1) what are experts' opinions about how best to use media for early childhood education? and 2) what are experts' opinions about the challenges, barriers, and/or disadvantages of using media for educational purposes?

Results: Experts were enthusiastic about the role of media in improving children's education. They offered advice on how children's media can be an effective adjunct to informal and formalized early childhood education, offering even young children powerful and influential messages. Experts discussed media access and sustainability, balancing media's educational and entertainment value, and parent and teacher roles and responsibilities. Experts addressed an important conundrum that educational media producers face: navigating the potential benefits and harms associated with young children's exposure to media. While enthusiastically describing media's values, experts detailed potential harms from particular programming and prolonged media viewing. Recommendations emerged for children's media including access to age-appropriate channels as well as training parents and teachers to appropriately engage children with technology.

Conclusion: This study offers unique insight from experienced professionals on the future of children's media in India and can offer direction and guidance in the development and dissemination of media content to children around the globe. The richness and diversity of experts' opinions adds clarity and context to our understanding of how to enhance the positive utilities of children's digital educational media while reducing concerns about its harms.

Introduction

Early childhood is a crucial period of brain maturation, higher neural plasticity and the development of essential skills which provide a foundation for later life [1]. Moreover, biological, functional, experiential, and behavioral health assets are shaped by early and ongoing person-environment interactions, i.e., within and across family, socio-cultural and physical environmental spheres of influence [2].

Well-produced television programs and other audio-visual media are increasingly well-situated to engage early childhood audiences, including those that are hard-to-reach, by offering a source of formal and informal education [3]. As the world becomes more globally connected, researchers have identified a 'public pedagogy' (i.e., processes and sites of education outside of formal schooling and educational institutions) created through educational media platforms such as television, radio, and video-hosting websites [4,5,].

While not a replacement for an enriching and healthy environment, educational media can benefit children. Longitudinal research conducted in the United States shows that young children's viewing of educational television programs and other audio-visual media can lead to positive trajectories, building reading, math, and social skills that last well into secondary school [6,7]. Additionally, economists Kearny and Levine [8] found that after the television program *Sesame Street* was first introduced in 1969, children living in locations where it was available through broadcast saw a 14% increase in their likelihood of staying on track in school. The same study showed that children who viewed *Sesame Street*, particularly African American boys and children growing up in disadvantaged areas, were more likely to be working at age-appropriate grade levels, compared to similar peers without such viewing opportunities.

Preschool children exposed to the various international versions of *Sesame Street* have made significant gains in their knowledge about letters, numbers, shapes, science, environment, one's culture, and

health and safety-related practices [3,9-11]. In a study of 223 Tanzanian preschool children, it was shown that significant gains in literacy, numeracy, social development, and emotional development were associated with children's receptivity of *Kilimani Sesame*, as assessed through the accurate naming of the program's characters [10].

To be effective, educational media must address the specific needs and values of its target audience. This is a significant challenge in a country such as India, where disparities and differences exist in terms of geography, socio-economics, and even religion. Approximately 8.5 million teachers work in India, yet it is estimated that an additional 1.2 million teachers would be needed to meet the needs of the large student population [12]. As a result, the Government of India has placed increasing emphasis on online education and integration of technology into schools [13,14]. Through public-private partnerships, installation of hardware/software, e-learning materials for teachers, and interactive Video Compact Disk (VCD) lessons for elementary school children have been implemented [13]. This shift could provide hard-to-reach students with greater access to educational content. However, there is limited research available to provide a comprehensive roadmap for effective application and improvement of educational content through media, particularly those targeting Indian preschool-age children and children from lower income communities.

The objective of the present study was to provide relevant data to inform the development, production, and marketing of educational media geared to young children in India. The funders and producers of *Galli Galli Sim Sim*, the Indian adaptation of *Sesame Street*, felt there would be value in hearing from child development and media experts. This qualitative work explores issues related to children and media; it describes perceptions, and offers guidance by experts to create better educational media for Indian children.

Methods

Procedure

The procedures and instruments of this study were reviewed and approved by the University of Maryland's Institutional Review Board. One-on-one interviews took place right after obtaining full consent, at participants' preferred times and locations. All interviews occurred in either Mumbai or Delhi, and were conducted in the preferred language of the participant. Interviews lasted between 60 and 90 minutes.

After asking about basic demographic information and participants' professional background, researchers probed experts on their opinions regarding the availability, use, and potential of media to impact early childhood education. Experts were asked about policy and market constraints and potential solutions, specifically for India.

Participants

Purposive and snowball sampling were used to identify a list of over 40 experts. Eligibility criteria required that experts have direct experience with young children or have participated in the creation and/or production of young children's content through different media platforms. More specifically, a listing of early childhood care and education experts at the curriculum and policy level, within and outside Indian governmental agencies, was generated. In addition, experts from media houses which create content for children,

including broadcasters of Indian media, were identified. These lists were based on first-hand knowledge of experts, review of government, non-governmental and media websites and programmatic materials. Experts were contacted electronically, as well as via telephone. A standardized recruitment protocol or 'Concept Note' was implemented, whereby the details of the study were presented, either in writing or verbally, to the potential participant. Over the course of several weeks, appointments were finalized with a diverse panel of 11 experts.

Measures, conduct and analysis of interview data

Interview questions arose from the expressed interests of funding, production, and research collaborators. The team tested questions during a pilot phase in early 2017. Revisions were made to simplify wording and abbreviate the interview length.

Efforts were made to enhance the study rigor by maintaining separation of roles, meticulous data collection/transcription processes, and independent analysis of data by the USA-based research team. A form of investigator and methodological data triangulation was implemented [15,16]. To ensure consistency, two project staff (Policy Innovations, Bangalore, India) performed all the in-person interviews, which were audio recorded, translated (as needed) into English and transcribed verbatim. Transcripts were originally created in Microsoft Word, and then uploaded into Microsoft Excel spreadsheets.

Two research questions guided the analyses of experts' interview data. These research questions included the more general question of : 1) What are experts' opinions about how best to use media for early childhood education? and the multi-part query of :2) What are experts' opinions about the challenges, barriers, and/or disadvantages of using media for educational purposes?

The analytic approach used Qualitative Description [17,18] which aims to describe participants' perceptions and experiences in the world they navigate. A team of researchers worked independently to analyze and write up findings. This was done through an iterative process of open coding, data sorting and aggregation, and axial coding of contextual data. A series of emergent themes related to each research question were generated [17]. These themes were summarized, using participants' quotes as illustrations.

Results

Sample information

The sample consisted of 11 media and/or education experts – ten females and one male, with an average age of 51.8 years. Eight of the eleven experts (72.7%) were parents themselves.

At the time of the study, 27.3% of the experts had a Doctoral degree, almost half (45.5%) had a Master's, another 9.1% held a Bachelor's, while the remaining 18.1% had a Post-Graduate diploma (Table 1).

Of the sample, 27.3% self-identified as media experts, 63.6% as education experts, and 9.1% as both. Almost all the experts (90.9%) reported work experience with young children, ranging from a focus on content creation for children to extensive, direct interaction with children. Further, 36.4% of experts had professional work experiences related to media production.

Expert ID	Sociodemographic Information
EXP_001	Female • 60 years-old • not a parent • Master's in Education · works for an NGO called Roopayan that teaches disadvantaged children how to read and write • develops new learning materials to train individuals affiliated with a certain UNICEF project
EXP_002	Female • 35 years-old • parent • Master's in Human Development from Nirmala Niketan College of Home Science · leads the Department of Early Childhood Care and Education at Muktangan, where she has worked for 9 years
EXP_003	Female • 50 years-old • not a parent • PhD in Social Sciences from the University of France • works as President of the Podar Education Network and as President of the Early Childhood Association, a non-profit organization • has worked in the field of early childhood education for the last 32 years
EXP_004	Female • 45 years-old • parent • Master's in Human Development and Family Studies from the M.S. University of Baroda • Master's dissertation concerned the influence of media on young children • works in consulting for early childhood education • works as a parenting coach and contributes as a National Executive Committee Member at the Association of Early Childhood Educational Development
EXP_005	Female • 39 years-old • not a parent • Bachelor's in Fine Arts • works as part of the content partnerships team in YouTube India, managing family and learning content
EXP_006	Female • 47 years-old • parent • Post-Graduate Diploma in Business Management and Marketing • worked for Viacom 18 for past 10 years • Senior Executive Vice President of the network, overlooking broadcasting for the kids' cluster (Nickelodeon franchise)
EXP_007	Female • 79 years-old • parent • Master's in Human Development from the University of North Carolina • volunteers at Mumbai Mobile Créches, working as a Director on the Board and as secretary • volunteers at the Association of Early Childhood and Development as the President of the Mumbai branch and as a member of the National Committee
EXP_008	Male • 43 years-old • parent • PhD in Children's Media Literacy • works with the Gandhi Smriti and Darshan Committee as a program officer
EXP_009	Female • 70 years-old • parent • PhD in Psychology • worked for 20-23 years at the National Council for Educational Research and Training • worked as a professor at Ambedkar University Delhi, and was the founding director of its Center for Early Childhood Education and Development • retired, though works in an advisory role at Ambedkar University
EXP_010	Female • 37 years-old • parent · Masters' in Education and Business Administration from Harvard University • serves as the Director at Education Alliance, Delhi, working with gov't schools to improve partnerships with other non-profit organizations and private sectors
EXP_011	Female • 62 years-old • parent • Post-Graduate Diploma in English Literature from Delhi University • serves as the Executive Director for Katha for the last 16 years, working in the field of education and publishing
	Education indicated represents the highest degree earned

Table 1: Experts' sociodemographic information.

What are experts' opinions about how best to use media for early childhood education?

Addressing best use, experts spoke extensively and thoughtfully on four prominent areas: 1) best practices in delivering media; 2) media content to enhance child development; 3) media interactivity; and 4) exposure to new and novel content. In discussing media delivery, experts addressed the importance of reaching different populations and providing educational programming as an adjunct to formal and informal schooling. Media content issues concerned appropriateness of delivered material, as well as suggestions for what messages enhance young children's development. Using media to promote interactivity, maximize sensory engagement and stimulate curiosity about the larger world were highlighted by experts.

Best practices in delivering media

Experts discussed hard-to-reach populations, noting India's geographic and socio-economic diversity. Several experts spoke of having technology extend to those with very few resources. Optimistically, though, many experts talked about how "new media" (i.e., the Internet and smart phones) and "free to air channels" were capable of reaching India's most vulnerable young children. Expert 005 felt that smartphones would be better than television for the most vulnerable. She commented, "A lot of village households will not have television but they will have smart-phones."

Experts discussed the reality and challenges of India's current educational system and how media could support overburdened and inadequately trained preschool teachers. Some noted that teachers who worked in rural areas, and with the poorest children, had the fewest provisions. Media could compensate for inequalities in provision of quality education, especially in over-crowded classrooms where children come from different language households. Expert 005 went on to say

It would help if they had more material they can use to teach children in an interesting and fun way…. That is where media comes in… when that same knowledge that same method of teaching is converted into some form of media… you can scale it up… erase the barriers which are brought by language…

Rather than a replacement for teachers, experts felt media has to be "an integrated tool that can be used for more effective education" [004]. Appropriate guidance, in both the school and home setting, was seen as critical. The ideal situation was one where caregivers oversee technology use by providing supervision or direction. Two experts expressed this need as follows:

We cannot leave these young children alone with the gadgets. There should be an adult who understands what is going on and talk to the child along with it, like play along with the child be there be… Adult

guidance is needed even there, there are many things children doesn't really understand… [007]

The guidance is still required. Coming back to the younger children, they are still in the early years and it troubles me when I see a one and a half or two year old with a cellphone in hand or and iPad and using it and the parents thinking that the next Einstein was born. [004]

Media should not just be a babysitter. Expert 003 commented that she believed it was important that parents talk with their child because the more one-on-one conversations the child will have, even when watching media "…then that is going to be more beneficial than the TV doing the talking and child doing the listening only." Experts advised that viewing, itself, be a shared experience; Expert 004 said interactivity could lead to "more fruitful and more exciting discussions." Expert 002 commented, "…Even if you are showing something [to children] for educational purposes, it has to be some kind of conversation, [and the] adult has to intervene in some way." Furthermore, experts believed that media use required "boundaries."

Media content to enhance child development

Experts raised a variety of issues when discussing how media content could be used to improve child development. Many talked about appropriate or inappropriate material for young children. Others raised points about content relevance to young children, recommending producers employ story-telling techniques, acknowledge cultural values, and expose children to new topics and ideas. Interestingly, few experts felt media should focus on school-based literacy and numeracy domains.

Experts mentioned how media content should be designed for young children, and avoid adult material. Expert 003 made the comment, "Media is not the devil, it is the content which is the devil." This expert felt it was very possible to create effective children's media, remarking:

So once you work on the content, then it will be like a boom to the children rather than something like a bane. Right now, it is the bane because the content is not there or the content is wrong… the current television programs that the children are watching, it does not have any good content. So there should be some good content which is there and like Teletubbies and Galli Galli Sim Sim.

Expert 007 commented that media programs "really have to be addressing the child's needs and how children are thinking otherwise I don't think they have any use." Other experts discussed how content should be relevant to the child's culture and upbringing. Expert 006 noted that there is "more of a trend now in the last four to five years where content is actually being produced locally and [it can] reach out to the kids with that local content." In speaking of Indian media production, several experts spoke about language challenges and the need to have local languages represented on children's programs. With regard to disadvantaged children, Expert 009 explained:

Language [development] is also very restricted. So all those situations make language one of the major areas of disadvantage and that needs to be sort of compensated for, especially in many cases the language at home is different from language at school.

Several experts talked about how the best media content involved the developmentally appropriate approach of storytelling. Expert 001 said, "Content should be in the form of stories." She continued, "Simple stories and very short stories for only seven-eight minutes… Don't

make it a very long story… [think of] the attention span of the child." Expert 009 remarked:

In the pre-school system, there is so much of an obsession with academics, so that you know, play, storytelling, activity, all these things are getting lost, puppet plays and things like that… plays, drama, you know those kinds of things can be much more effective and can be very useful for kids – something that they will look forward to and something which they are losing out on now.

Only two of the eleven experts talked specifically about how media could be used to support early learning and school readiness skills. Expert 005 felt "Media can encourage whatever is there innately in [children]." Expert 001 specifically noted that media could improve: a) language development, b) cognitive development, c) physical and motor development, d) socioemotional development, e) creativity and aesthetic appreciation.

Media interactivity

That media needs to promote interactivity was discussed by several experts in relation to young children's media use. Expert 002 felt that media should be "engaging the child and making the child active rather than a passive recipient of what is being told." Expert 009 noted:

Somewhere it needs to be interactive… Because you know if it's like passively listening to that, then that will also dull the brain of the kid because they are not engaging adequately… But if, whatever is the software or program is there, if that is able to engage children and sort of make it more interactive.

Different media platforms can encourage interactivity. Expert 003 mentioned radio as having strong potential and felt it would be good for delivering children's programs. She remarked:

There can be some nice, funny and short skits on the radio for the children to listen to or the radio jockeys should call the children at their stations and ask them about what they want from school. You know, basically, due to involvement, they will feel that radio is also element for them.

Other experts felt that online media could promote better involvement with media material. Expert 005 felt that online platforms were preferable "because television is a little more linear in terms of… you know watching." In contrast, a child can choose pathways when considering media on the Internet. Expert 007 talked about how:

Children need to be doing things… They have these beautiful songs and dramatizations, but unless the child has put the seed, touched the soil, watered it and seen it grow, that is a totally different experience and that remains with you for the whole life and you do not forget that and that along with it tells you how to care… You know there are many, many other experiences, which can't be substituted.

Media was seen to have the capacity to involve the children through different approaches. Expert 003 talked about interactive media and how children "can actually read with pop-ups and sounds and stuff like that, so they become [engaged] visually, kinesthetic, auditory… and all these important senses of learning are involved." In discussing interactivity, several experts suggested encouraging physical movement among young audiences. Successful children's programs are ones where "they tell them to get up to start doing things," according to Expert 002. She went on to say, "They talk about tunes and everything but kids almost remember it all because they have done the action of sequence which they are teaching."

Exposure to new and novel content

A noted strength of media and programing is its ability to expose children to new and novel content. Discussing material delivered via the Internet, Expert 004 said:

There is so much content which takes children beyond the textbooks and that is extremely exciting because the teacher today, needs to just… You know guide them, excite them, and ignite a curiosity and then there is so much on the Internet for younger children that they can explore.

Expert 001 remarked that through media "there should be something for the child to find out… the child himself should find out, not be told. That's important. Children must be given things to do and find out." Expert 010 gave the example that "A child who may not have been to a zoo or travelled outside… If you are able to show the visual effects of an animal to the child… [The] language barrier is also gone [using visual media.] You don't need words to explain so it can be brought to a child you know in a very simple way."

What are experts' opinions about the challenges, barriers, and/or disadvantages of using media for educational purposes?

Experts' responses yielded five overlapping themes, including: 1) infrastructure access and sustainability; 2) curriculum content, specifically balancing educational and entertainment value; 3) supervision and the roles and responsibilities of parents and teachers; 4) developmental challenges and age-appropriate early childhood educational media exposure; and 5) dangers, harms, and safety. Collectively these themes highlight a range of issues framed within socio-cultural and economic contexts.

Infrastructure Access and Sustainability

Infrastructure access and sustainability encompass issues related to actual availability and maintenance of technology, electricity and other connectivity considerations, along with socioeconomic issues affecting the above.

Access issues

Experts consistently discussed "access" challenges. Upon elaboration, they referred to "one television household, one phone household," and questioned "how much access kids have." Expert 006 noted that "even though parents may be interested, they may not be able to afford…," and "…[the] challenge, of course, on those fronts is… how much access do lower socioeconomic people have… access to videos and OTT [over-the-top] platforms that are not convenient to actually get." Connectivity and associated costs, "especially in small towns and villages," were identified as key concerns. Expert 005 summarized the challenges in the following way: "So, I think if we can resolve accessibility, both in terms of the equipment and the… supply of electricity, supply of internet, all of that, I think that is one very key issue…" The expert further offered that there should be a focus "more on online platforms because television is a little more linear in terms of… you know watching. And, I feel India has more smartphones than television."

Experts acknowledged media's ability to supplement the work of educators, yet other experts warned that teachers must have information regarding "when electricity would be available [to] plan accordingly." Experts also questioned whether private and government schools have the necessary equipment and sufficient electricity "to charge these gadgets." Expert 001 remarked:

"…if I want to use electronic media in the classroom. So how do I do that? I have to have the hardware, I have to have a computer, or a TV set, or a smart board, projector, etc., to use the media".

Interestingly, one expert suggested that in schools with limited facilities and more students than available computers, teachers may avoid technology due to the problems it could incur. Expert 009 said that teachers may be concerned about damaging equipment so they "… don't use it because they fear the children using [it] will lead [it] to break… [and] then they will be held responsible for it." Thus, adequate access and supply of technology was seen as "a serious management issue."

Some experts spoke of specific challenges with radio, should that medium be used in the classroom. Expert 001 said:

So if we link it up with radio, there is also Meena radio… If you have to connect it with radio, that is also very difficult, if you speak with the government, then they have to start and switch on the radio at the same time. So there are infrastructural challenges.

Sustainability issues

Experts acknowledged the need for country-wide inputs and sustainability efforts. Expert 006 alluded to the government when saying "we have to give them scale so that they are able to reach out to a larger audience and an audience which is in the lower socioeconomic strata." She also noted the need for "some revenue model behind all of these efforts" and added that "the business is under huge pressure if we have to move it to an educational platform where then there are not enough stakeholders."

Another expert, Expert 005, questioned whether "there is enough development on the software side… yet." Sustainability was also questioned in the context of technology misuse.

How do you ensure that you know it doesn't get misused? So that's another key thing because again there you lose sustainability. If it is not serving the purpose, somebody is just taking it and selling it off; you won't be able to sustain that. The donor will, after one year, stop supplying. [005]

On maintaining equipment, Expert 010 asserted:

So like government a lot of times has the budget of putting computers or smart boards and all. But it doesn't get used, so it doesn't get maintained and another two years down the line it is as good as junk.

Age-appropriate Curriculum Content, Balancing Educational and Entertainment Values, and Teaching Methods

Experts articulated concerns regarding media's program content, and the balance of education and entertainment. Further, they expressed a sense of unfamiliarity with incorporating media into existing teaching methods.

Age-appropriate content

Many experts agreed that media "platforms have a lot to offer to kids" but also felt that some media content could be extremely

problematic. Expert 002 remarked, "There are certain programs I know for sure my kids should not see it and I have had a very intense conversation with them, pointing out how hideous they are." Expert 005 explained:

Not everybody has [his/her] head in the right place. I mean, even if they have it… they don't… sort of… do that. They may have the ideas but they don't execute them. Their focus is purely making money. So, a lot of the content that comes out on television, content that comes out on films, is not healthy for children.

Acknowledging children's impressionable nature, experts expressed concern about content. Expert 008, said, "I am not very confident of the kind of content that is being served out there for children, small or big." Expert 005 was apprehensive about children watching "trash." Expert 003 remarked, "As I said, the current television programs that the children are watching… [they do] not have any good content". A specific content area of concern was violence. "There is a lot of inappropriate content that the children are watching". Expert 004 remarked, "I'll tell you, I get troubled a lot when the popular programs that the children watch which show undue violence because there is a lot." Expert 008 explained that "Children become very insensitive and violent while playing these games". He felt that media producers should get rid of the media violence and "promote non-violence".

Experts implored that media creators be mindful of content accuracy. Expert 005 stated that for educational purposes, "…it becomes the responsibility of the individual creator that they verify and they put the correct information out there, as there is no one to check." Expert 003 cautioned, "…[They] watch the subtle messages and not the covert messages… So that is what we are looking at and we need to be careful about where the young children are concerned."

Several experts insisted that media have "limited value," and cannot, nor should not, replace experiential learning. There was recognition of the need for a "full-fledged curriculum" that contains both educational and psychomotor aspects. Expert 006 questioned whether "we have covered this whole curriculum bit as well for the younger kids."

Balancing educational and entertainment values

Expert 005 discussed how media could be both entertaining and educational. One expert stressed that "to make it sustainable, it has to be entertaining." Expert 007 advised that media creators should "make sure that it should capture children's imagination." Striking an acceptable balance between media with educational value was perceived as very challenging. Expert 006 explained, "It's a very fine line right now. We are trying to balance education versus entertainment shows. And the balance is very clearly tipping in the favor of entertainment."

Teaching methods

In talking about challenges, experts raised the issue about media interactivity. As Expert 010 stated:

"…it's limited in my view, because I don't think it can do that whole role of… involving the other senses and… the gross motor and the fine motor abilities which are so important at that age." [Media programs have the potential to] "enhance certain learning… by showing pictures, singing songs" while telling a story, like "maybe… Galli Galli Sim Sim can do that."

Experts felt that storytelling was an effective teaching method, whether "through TV or through internet". Some believed it

introduced difficulties. Expert 010 commented "…children love stories… they really relate to that format, [but the challenge is one of] staying true to that format…" Further, Expert 009 explained:

Now my own take on it is that you are telling a story, and, at the end of it, if you are going to ask the child, 'What did you learn?' then you are ruining the fun of [the] story for them. Because next time you will tell [the] child a story, the child will always be thinking, 'Okay, what am I supposed to learn from this?

Monitoring, Supervision, and the Roles and Responsibilities of Parents and Teachers

General supervision

In describing the context and conditions under which young children use media, experts talked about how children should "not [be] alone, but in the company of elders." Expert 007 said:

…we cannot leave these young children alone with the gadgets. There should be an adult who understands what is going on and talks to the child along with it, like playing along with the child. Many times, we give them cell phones, iPads, and whatever they have to just keep them occupied.

Expert 002 questioned whether parents were "aware of putting restrictions, blocking those channels and things like that." Several experts' comments reflect this; for example, Experts 004 and 005 remarked respectively "…responsible usage [and that] falls in the hands of the adults and significant people who are responsible for the children" and "…it needs to be monitored and metered."

Parents and teachers roles and responsibilities

"Parents are part of that media education program – what children are accessing [and] what children are watching," said Expert 004. Expert 003 talked about how "there has to be something in the parenting space which is media-related" because they "feel lost sometimes," particularly those in "lower income groups." Expert 006 expounded, "Parents normally want to keep kids away from [the] screen and you know this whole thing about 'they are too young,' and therefore, the less amount of television they watch and the less amount of screen exposure they have, [this] is better." On the other hand, Expert 006 said a growing belief and norm among parents was:

Kids have to be exposed to screens because they are digital natives, [and] they can handle the tablet and iPad even before the adults can.' And the fact that there is so much peer pressure about watching YouTube, watching Chu Chu TV, watching Peppa Pig, watching during their meals, during their outings…

Evidently, experts felt that the value of educational media could be enhanced by provision of parental training.

Experts recognized technology in the classroom as a useful supplement. Expert 003 urged, however, that all teachers "need to be trained so that they can empower the children and look after their needs." Even when they had provisions, such as technology, teachers lacked a firm understanding of how to incorporate the devices and content into their curriculum. Expert 010 remarked, "getting the staff to understand when to use it, how to use it and then… to actually put that as a part of their schedule." Its relevance within government schools was noted by Expert 009 who said:

In government schools, the major barrier is that the teachers themselves… [when they] are technologically challenged, then they will not promote it. A major barrier… is that teachers in the government schools are always threatened to feel accountable for things. So, if there is a computer in a classroom and something goes wrong with that computer, they feel that they will be held responsible.

Concerns regarding the capabilities of individual teachers were expressed, and media was seen as a way to compensate for potential weaknesses and shortcomings. Expert 003 commented, "videos… can actually do a much better job than a teacher." Expert 005 contributed:

If it is used in the right intention, then there is no disadvantage to it. But if you get some material, put on the DVD, and leave the classroom for children to just watch it, this I have seen many times in schools. It is used a lot more for entertainment purposes. If we ask our kids what they did in school today, they would remark that '[the] teacher showed us a film today.' So, that's it, [they] watch the film and move on to the next class. Then what is the purpose of showing media to children?

Developmental challenges and age-appropriate media exposure

Experts talked about preschool children's developmental stage and the length, format, and sequencing of television programming. Expert 004 noted that the content and methods need to "really respond to the needs and interests of children first and foremost." Likewise, children's "attention span" was discussed by Expert 001. She said:

Only if the story is interesting will the child stay and watch, otherwise [the] child will run away… Don't make it a very long story… 10 minutes to 12 to 13 minutes, because that is how much the attention span of the child is. Now also, of course, one has to keep the pace in mind. But you have to also understand from the point of view of small children, who do not watch too much TV… they are slow in learning. Their visual literacy is not there.

Experts urged that children's exposure to technology be limited in order to balance education and play. Expert 002 added, "In terms of time, using it every day, it's very boring. Young children need to play more and if you are using media as an alternative to play, then… don't do it at all." This expert discussed limiting media exposure "…because young children, very young, need to use their entire bodies." Reflecting on her own family, Expert 010 said, "If I look at my children's environment, I would want to limit the role of media completely. I mean, I have resources and despite anything, I believe play is better than media." She continued that among those with fewer resources, that "…if they [poor children] have absolutely no stimulation, then yes, you know media can play the role of exposing them to much richer language, to many of these pre-math concepts and vocabulary concepts…" Expert 007 talked about balance, saying:

20 minutes is the maximum [time in front] of computers that should be given to young children below four years [of] age. Not more than that at a time. So limited exposure is okay, but too much of that [exposure] makes the child passive… Obesity is a big problem with [in] higher socioeconomic groups. The one reason is because children are just sitting in front of the screens – small, big, whatever – and they are not moving so much.

Dangers, harms and safety

Some experts discussed dangers associated with young children's exposure to various forms of media. Expert 003 said:

So I'm against smartphones being engaged with children, there should be either a tablet which doesn't have any [breaks]. See, research has proven now that it is a kind of [like] a dual microwave, so for the safety of the children.

Two other experts spoke about the physical effects of screens. Expert 003 said, "…my eyes will get tired and my eyes are very important to me," and Expert 009 added:

So I am sure it is a health hazard and it has already been documented. So many more children are wearing spectacles now; their eyes are getting spoilt because of the constant glare that is coming from the screen.

Experts also addressed the media content, including films and television, noting that it may have both short and long-term negative influences on children. Expert 005, in discussing portable devices, went so far as to call it an addiction: "Just having people glued to their devices is not a digital revolution, it's an addiction." She continued:

So, a lot of the content that comes out on television, content that comes out on films, is not healthy for children… How do you make sure that whatever device the child is using is not pushing bad content in it? That bad could be anything, it could be… bad in terms of indecent content, but it could be bad in terms of addictive – harmless but addictive content. Like if they are going to watch meaningless cartoons all day, that same device can actually… hamper that child's development. [005]

Expert 008 remarked, "…Because if it falls in [the] wrong hands and there are children who do media multi-tasking, so they can be a danger in that way." Expert 003 said:

Content should not contain bad words or bad language and bad behavior because the children pick up when a character in a cartoon program pushes somebody and doesn't feel empathy towards that character. So, these are the little nuances which are to be incorporated in the program that is being developed for this age group…

Experts raised additional negative effects. Expert 007 said, "…and when the screen is not there, what do you do? Frustration comes." Additionally, Expert 009 observed that "[children]… are not socializing enough. I have read some studies where they have shown that children are losing out on language because they are not conversing enough within the families, as well as outside. So all those are very serious hazards."

Discussion

Eleven experts, representing the fields of child education and/or children's educational media, offered important insights on how to enhance the content, production, delivery, and dissemination of media for young Indian children. Two research questions were examined and consistent themes emerged, including infrastructure, appropriate platforms for media delivery, culturally- and age-appropriate content and formatting to both facilitate and foster young children's healthy development, and the need to enhance effective use of media by teachers, parents and other adult caregivers.

In this study, experts addressed an important conundrum that educational media producers often face: that is, addressing the perceived benefits and harms associated with young children's exposure to media. While enthusiastically describing media's many values, experts detailed potential issues associated with particular programming and prolonged media viewing. They described with

detail many important content domains; moreover, they suggested that media production teams create more interactive, experiential activities that can be engaged in when children use media, avoiding passive viewing. They felt that educational media needs to do a better job of instilling a desire to learn in young children and provide more opportunities for their interactivity.

Importantly, experts highlighted issues of accessibility, acknowledging unless exposure is guaranteed, content cannot translate into impact. Many spoke of the digital divides across socioeconomic statuses and government versus private school. Given the widespread diffusion of technology, even among low-income households, it appears best to use "new media" which has better reach than even television (which relies too much on centralized broadcast) [19,20].

As young children are a special audience, producers should employ distinct media platforms and develop content unique for this age group, avoiding material that is violent in nature. Even in short-form pieces, content for young audiences should convey compelling narratives, strong characters, and clear themes. Media should encourage (inter)activity rather than passivity; audiences can be encouraged to engage with media material through songs, dance, and storytelling during and after exposure to content. Teachers and parents need training, too, to best use media in the classroom and home. Media can support early learning. Broadcast and online content can prepare young children with important school readiness skills [21].

Experts' feedback provides a blueprint for action and encourages media producers to partner with experts in the development and evaluation of age-appropriate material. This sample of specialists emphasized the need to develop formalized guidelines for when and how to use educational media to achieve learning outcomes related to school readiness and underscored the importance of paying attention to upbringing and socioeconomic status in educational media programming.

The richness and diversity of experts' opinions adds clear advice to our understanding of how to enhance the positive utilities of children's digital educational media, while reducing potential harms. This can translate into programming that has greater reach and more favorably impacts young children's development and early education.

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