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Remedial or Developmental Teaching

A Review

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Research Cell on Education

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Remedial or Developmental Teaching: A Review

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Abstract

Remedial education or interventions in schools, colleges, and universities are under scrutiny in most countries in recent years. They are particularly important in a context of increasing demand for skilled workers. However, they are often costly, and their efficiency in increasing student performance has been questioned. The objective of this literature review is to provide an overview of recent empirical work on the impact of remedial teaching methods or remediation policies in college, university, and vocational courses education and on the outcomes of students, in terms of educational achievements and qualifications. Recent evidence on the impact of traditional remediation interventions suggests that the effects are very mixed: remedial courses appear to help or deter students differently by state, institution, background, and level of academic preparedness. Some recent studies that evaluate mentoring approaches have found evidence of positive effects and interestingly find that face-to-face services cannot easily be replaced by online teaching. Another interesting finding is that combined approaches such as academic support services and financial incentives can be more effective than the provision of these services separately. It is also important to note that even when interventions find positive effects in the short run, they may dwindle out in later years. Finally, studies often find the impact of remediation to vary according to students' characteristics. For example, in certain contexts, girls compared to boys and lower-achieving students have been found to benefit more from remedial teaching programmes. There is a critical need for more research on remedial teaching methods especially in higher educational institutions in developing countries like India.

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Context

Education is the right of all children, and integrated education aims to ensure that all children have access to an appropriate, relevant, affordable and effective education within their community. The recent educational policies of inclusion of students with disabilities in mainstream classrooms have created significant changes in practices for teachers. The inclusion of students with special educational needs is a focus of debate in education systems all across the world. Developmental or remedial education is meant for those students who are under-prepared for or not able to cope up with the course work in an educational programme they enrolled. Such developmental education is being provided in many higher education institutions across the world for the students who require such support. All the students admitted into an academic programme or courses may not be well prepared for and equipped with the basic academic skills to take up the course. The circumstances and background characteristics of students along with their own innate ability might cause such differences. Students' under preparedness to cope up with the course otherwise addressed properly it may result in not only their drop-out but also difficulty in managing the learning environment. In

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this regard, as it is observed development education is a field of practice and research having its theoretical foundation in the developmental psychology and learning theories. While being sensitive and responsive to individual differences and special needs among learners, it is to promote cognitive and effective growth of learners.

Remedial education is also known as developmental education is assigned to assist students in order to achieve expected competencies in core academic skills such as literacy and numeracy in basic skills education, compensatory education, preparatory education, or in academic upgrading. By remediation policies, we mean any supplementary courses or interventions designed to improve basic skills for students who failed to achieve the necessary requirement to access higher education programmes, including supplementary courses for those who did not achieve a sufficient score, but also peer-support groups, mentoring face-to-face or with the use of Information and Communication Technologies (ICTs) and financial incentives. The main objective of remedial education or remedial teaching is identifying slow learners and providing them with the necessary help and guidance to help them overcome their problems, after identifying their areas of difficulty. A remedial teaching class is one that is meant to improve a learning skill or rectify a particular problem area in a student. Remedial instruction involves using individualized teaching of students who are experiencing difficulties in specific subject areas. It may be taught individually or in groups.

This literature review will give an overview of the recent findings in this context in India, as well as in other countries such as the US, Canada, European countries like UK, Italy etc.

Remedial Education Global Scenario

Identifying the impact of remedial policies

Remedial education is a multifaceted approach, tailoring remedial intervention plans to a student's specific needs. Remedial teaching focuses on skills rather than on content. It is offered to students who need educational/moral assistance. It differs from special education which is designed specifically for students with special needs. Remedial education can be designed for any students, with or without special needs, the defining trait is simply that they are underprepared, regardless of why. The remedial courses focus on advancing under prepared students' literacy skills English and reading or mathematics skills. These skills include visual discrimination, perceptual organization, sequencing, abstract reasoning, auditory processing, mathematical operations etc. However remedial courses can also be offered for other subjects such as science or study skills (Perin, Dolores, 2013 Paramore, Tricia, 2013). Remedial education is also known as compensatory education (Denzin, 2017), developmental education (Ganga *et al.*, 2018), preparatory education (Hu & Liu, 2017), and academic upgrading (Glaziou, Sismanidis, Zignol, & Floyd, 2016). For instance, Canada uses the term academic upgrading for secondary school students so that they can achieve the prerequisites for postsecondary education (Glaziou *et al.*, 2016). In the United States, many prefer to use the term developmental education rather than remedial courses (Ganga *et al.*, 2018).

The studies considered here investigate the effects of remedial policies on student outcomes by measuring the policy interventions aimed at boosting educational achievements of the students. Remedial teaching interventions are one method that may be able to reduce the variance of achievement in the classroom and thus ensure that all students are progressing. Remedial programs offer the possibility of focusing on those students who are lagging behind and teaching at a level that is appropriate for their current level of skills. Ideally, such an intervention would increase their progress, and decrease the heterogeneity of student learning levels in a given grade. Muralidharan and Zieleniak (2014), P. Glewwe and K. Muralidharan (2016) show the variance in student learning levels within a cohort increases over time as they pass through the school system. The findings from Betül Betina Yolak et al (2019) revealed that remedial courses had academic, social, psychological, economic, and career development impacts on students' lives. Moreover, as students' school success improved, students learned how to spend their leisure time effectively in a secure environment, became socialized, increased their self-confidence, and realized their potential. Remedial education for mainstreaming out of school children may reduce engagement of children into child labour/household chores and lead to their integration with formal education. Reducing illiteracy among children and contributing to the goal of 'Education for All' in the long run would be the potential impact of the programme. The research from Banerjee *et al.* (2016) provides promising evidence that remedial education programs help students prevent educational stagnation and ensure a successful academic upbringing for every child.

Canada

In Canada, the process whereby mature students take secondary school courses so that they can qualify to take post-secondary education is called academic upgrading. Academic Upgrading is an in-class, free, flexible, supportive program designed to help students meet their individual college, apprenticeship or employment goals. The Alberta Ministry of Enterprise and Advanced Education advises that academic upgrading can be pursued through a post-secondary institution, a school board program such as a storefront school. Many aboriginal children have experienced several years of reading failure in Canada and statistics show that chronic school dropout among aboriginal youth with many reporting that reading difficulties was a contributing factor for their decision to leave school (Hayward, Das, & Janzen, 2007).

Angrist, Lang, and Oreopoulos (2009) conducted a study in Canada and found that interventions such as support services including access to mentoring by upper-class students and supplemental instruction. Peer advisors and Facilitated Study Groups (FSGs), course-focused, weekly sessions, financial incentives up to the equivalent of a full year's tuition fee raised the grades and improved the academic standing of the students. They found that a college program combining academic support service with financial incentives had a positive effect on study skills of women where there is no effect on men.

United States

In the United States, research shows that anywhere from 40 percent to 60 percent of first-year college students require remediation in English, math, or both. Remedial classes improve students'

time to degree attainment and enhance their likelihood of completion. While rates vary depending on the source, on-time completion rates of students who take remedial classes are consistently worthy. One of the studies suggested that with regard to socio economic and racial backdrop, the problem of coping with educational courses is worse for low-income students and students of color, whose rates of remedial education enrollment are higher than for their white and higher income peers. According to the recent study, 56 percent of African American students and 45 percent of Latino students enroll in remedial courses nationwide, compared with 35 percent of white students (Laura Jimenez, *et al.*, 2016). Bailey, Jeong, and Cho (2010), Bettinger and Baker (2011) found that counselors provided both proactive and continuing outreach to the students. Coaches were full-time coaches, supported by the process and technology infrastructure. Outcome of the remedial programme is that it resulted in positive effect on enrolment. The effects persisted for at least one more year after the coaching had concluded and the positive effect on college retention lasted even after 24 months. Martorell and McFarlin (2011) using longitudinal administrative data for one of the states in US to study the effect of a college remediation program found that the program had little effect on academic and job-market outcomes. So effects of the programme remains mixed, with small positive effects to moderate effects for certain geographical areas.

However results evident at college level from other studies suggests that remedial teaching programmes helped students developing their skills and facilitated in succeeding in future. A study conducted on first year students in colleges focused on the effects of remedial courses on student success. First-generation college students were underprepared and had deficiencies in reading, writing, and mathematics. However, students who completed these courses were more likely to develop clearer goals for education and careers, better ideas of what it takes to succeed in college, and some practical skills useful for achievement (Zeidenberg, Jenkins, & Calcagno, 2007). Bettinger and Long (2009) conducted another project with approximately 28,000 students to see the impact of these courses on mathematics and English. Findings revealed that students who went to remedial courses had better academic outcomes than those who did not. Students who have remedial courses continue in college better than the ones with similar background and test results who do not. Moreover, students with remediation are more likely to transfer to other colleges that are more competitive and to graduate than those who do not have remediation.

Europe

Several European educational institutions currently offer remedial education to soften transitional barriers for students. Some researchers (Kozeracki, 2002, Rienties et al, 2008) have emphasized the importance of remedial or developmental education in modern society. According to Kozeracki (2002), developmental education incorporates human development theories, is intended to bring together academic and student support services to assist students in preparing to make choices appropriate to their current stage in development, and is viewed as being appropriate for all students. Developmental courses include not only learning improvement programmes or services, such as learning assistance for individual students, course-related services and comprehensive learning systems, but also seminars for freshmen, critical thinking courses, study strategies courses,

orientation courses and work classes for freshmen (Kozeracki, 2002). By helping students to strengthen their basic academic skills, like the ability to read, write, analyse, interpret and communicate, their opportunities for success in the labour market can be significantly increased. Thus remedial or developmental education improves not only students' prospects of graduating, but also their job opportunities. Following general usage, the terms 'remedial' and 'developmental' are used interchangeably in the literature.

Although remedial programmes are less common in Europe than in some other parts of the world, several European higher education institutions have now started to offer them. One reason for this is that students are experiencing transitional problems on entering post-secondary education. Recent studies have shown that well-trained mentors are important for impacting on students' academic achievements. Therefore, an approach solely based on peer-intervention might not be sufficient to tackle the challenge of the increasing number of students in need for remedial interventions in the UK context (Rienties *et al.*, 2008). Using a number of different measures is crucial for assessing the short-run and long-run effects of remedial policies. Quantitative measurements typically include course success, course retention, programme persistence, progression through sequential levels of developmental courses, progression to college-level courses, and how well or how high students scored in their courses on average. Qualitative measurements include student perception and satisfaction with various elements of the programme. It is also important to account for college major choices, and longer-term educational outcomes, such as total credit accumulation and degree completion. Finally, few studies looked at long-run outcomes such as measures of employment, wages, health etc. (Aud *et al.*, 2011), (Bettinger *et al.*, 2013; Clotfelter *et al.*, 2013).

Many Italian Universities, at the beginning of each academic year, organize courses at the pre-university level, which should enable students to begin their university career with an adequate level of competences. It is evident that the remedial classes conducted at the pre university level produce beneficial effects. It is found that students who attended remedial programmes are more likely to persist in college and to complete their educational program compared to students with similar characteristics who did not take the courses. De Paola and Scoppa (2014) found that remedial assistance in classes resulted in positive effect on the number of credits and negative effect on drop out. In one of the studies conducted in Indonesia, researcher found that although the teachers admitted that low-achievers benefited from remedial teaching programs, it was difficult for the teacher to design and conduct effective remedial teaching programs mainly due to time limitation. Besides, the difficulty in simplifying teaching materials, students' learning overload and lack of school support were seen to be other problems encountered in remedial teaching programs (Eko Noprianto, 2019).

India

In developing countries like India, the integration movement is a new concept for the educators and therefore, it is essential to restructure the policies and practices of the teachers to make integration as successful as it is in the developed world. Efforts to integrate disabled students into the least

restrictive environment in the educational institutions like schools colleges is fast becoming the dominant educational ideology in India. While growing aspirations and demand for education increasing the enrolment in higher education, state affirmative action and supportive programmes facilitating of students from different backgrounds and differences in learning achievements. But as it is observed that students belong to SC/ST/OBC and minority communities have been facing difficulties in coping with the course work leading to their dropout or wastage. In this regard, with an aim to make special allocations for promoting higher education for the minorities along with other marginal and backward classes, the UGC during the Twelfth Five Year Plan has introduction remedial assistance programme for students belonging to SC/ST/OBC (non-creamy layer) and minorities. The scheme of remedial coaching is made applicable to those higher education institutions (universities and colleges) established under section 2(f) and Section 12(B) of the UGC Act, 1956. Among these again institutions which are having sufficient number of students belonging to SC/ST/OBC (non-creamy layer) and minority are to get financial assistance for the remedial support programme. Such a programme has been implemented since it was introduced during the 12th Five Year Plan (2012-17). There has not been much research or assessment on its working or impact of the remedial support scheme of the UGC. **In this regard, the present study makes an attempt to rapidly assess the presence of the remedial assistance programme across higher education institutions in Telangana state. In fact Telangana is one of the states in India having higher gross enrolment ratio across social groups. The state has considerably higher representation of SC/STs/OBC and minorities in the state population.**

The 2011 Annual Status of Education Report (ASER) noted that, at the primary level, school enrolment is approximately 93%, including both girls and boys in rural areas in India (Gelda, Narayan, Mudiyaam, Raturi, & Seshan, 2013). Remedial classes in municipal schools in Delhi's lowest income areas have been offered by the Center for Social Security Action & Research (CSSAR) since 2008 (Mukerji & Walton, 2012). Instructors teach regular school subjects in those courses. The aim is to address gaps and make the children and their parents interested in education. Children become more confident as they attend those courses and this reduces school dropouts. Some courses are at the primary level and some are at the secondary level. Some of them are only for female children from impoverished areas, as the aim is to prevent the girls from neglect and to offer them the right education for a better future. At all levels of these courses, administrators plan to supplement the gaps in regular education. At the secondary level, English language learning, reading, and writing skills are emphasized in the classes that take place after school. Feedback from parents is collected and it is revealed that remedial courses not only reduced school dropout rates but also increased school attendance especially for girls while improving their learning in reading and writing.

Three studies which all are conducted in India examined the impact on students' educational outcomes of interventions that focus on "teaching at the right level", which typically involves remedial/supplemental instruction and/or tutors or volunteers to provide that instruction. First, Banerjee, Cole, Duflo, and Linden (2007) report results from an experimental evaluation of a program run by Pratham a non-governmental organisation which works towards the provision of

quality education to the underprivileged children and was specifically targeted at the lowest performing children in public schools in the Indian cities of Mumbai and Vadodara. The program provided an informal teacher hired from the community known as a Balsakhi or “friend of the child” to schools, with an explicit mandate to focus on children in 3rd and 4th grade who had not achieved even basic competencies in reading and arithmetic. The program improved students’ test scores average of math and English scores after one year of the program, and tested the results after two years also which shown significant improvement. Most of the gains were observed for students who were pulled out of their regular classroom and not for those who continued in the regular class. Second, Banerjee *et al.* (2010) report results from several interventions designed to improve community participation in education. Of all the interventions tried, the only one that was found to be effective at improving learning outcomes was a remedial instruction program implemented by youth volunteers hired from the village, who were provided a week of training and then conducted after school reading camps for two to three months. These increases in learning were substantial. For the average child who could not read anything at the baseline, exposure to the remedial instruction program increased the fraction considerably. For children who were not able to read, the average impact of attending a camp raised the probability of being able to read letters by 60 percentage points, which is a very large effect. Third, Lakshminarayana *et al.* (2013) studied the impact of a program run by the Naandi Foundation an NGO whose one of the services is to promote elementary education in rural areas with positive discrimination of girls. The program recruited community volunteers to provide remedial education to children in a randomly selected set of villages in Andhra Pradesh. After an initial outreach to households to communicate program details, the volunteers provided two hours of remedial instruction per day after normal school hours in the students’ school. After two years of this intervention, student test scores in program villages was significantly higher than those in the comparison group, suggesting a large impact of the after-school remedial instruction program. There is some evidence that computer assisted interventions can also be one tool to address low performance. A computer assisted learning program was implemented by Pratham in the city of Vadodara in India for the targeted school children, an evaluation of such intervention showed that at the end of the program, students performed better in math in schools where the computer-assisted math learning program was implemented (Banerjee, Cole, Duflo & Linden, 2006).

Country examples of remedial programs

Perhaps the best evidence to date on positive effects of large scale remedial education program targeting the most disadvantaged children comes from the randomized evaluation of the “Balsakhi” program in India implemented by the NGO Pratham. This particular model of remediation which trained community members to deliver intensive help to children falling behind was expanded to another program called Read India implemented rural areas (Banerji & Walton 2011).

Evidence shows from a study done for remedial education in medical colleges in India shows that six to fifteen percent of health professions students experience academic difficulties and these percentages are increasing over a period. Poor academic performance and scholastic failure can result in student's dropping out of professional programs. Author suggested some of the ways in

which assistance programs can be delivered are supplemental instructions, mentor support, peer interactions and group study, in person remedial instruction and regular feedback from students which will identify the areas not well understood by students, thereby can take remedial action (Shobha Misra, 2015).

Lokanath Mishra *et al.* (2020) amid the COVID-19 outbreak and persisting academic disturbance during the lockdown period conducted a study that how online teaching-learning to address the required essentialities of online teaching-learning in education and how can existing resources of educational institutions effectively transform formal education into online. However they felt it can be anticipated that in the upcoming time students would face multiple challenges of educational hardships for peer tutoring, remedial teaching in promoting quality education through online teaching-learning.

Interventions that work

One broad intervention that has been rigorously shown to increase learning combines remedial programs that target students who are lagging behind with teaching at the right level, that is teaching that accounts for students' current level of skills. Ideally, such an intervention would increase student progress, and decrease the heterogeneity of student learning levels in a given grade. The evidence suggests that this may be the case, with several high-quality studies finding strong impacts of remedial instruction programs on learning outcomes, even when implemented by volunteers or informal teachers with little formal training and paid only a modest stipend that is several times lower than the salary of regular civil-service teachers (Glewwe and Muralidharan, 2016). Banerjee *et al.* (2015) present results from multiple RCT's conducted across several Indian states that implementing the pedagogy in dedicated learning camps that are held outside of normal school hours, where teachers use learning-appropriate remedial materials, was effective in raising test scores. Suzanne L.W. Wisniewski (2016) provided a rigorous review of evaluations of education programmes in developing countries. The review is organised to provide guidance to policy-makers by identifying education interventions that are effective, one of the interventions suggested by author was teaching at the right level, remedial education, tutoring the students who are lagging behind at right time.

Other efforts to address the needs of academically underprepared students

While remedial and developmental courses are the most prominent tool currently used to improve school or college success for academically underprepared students, other increasingly popular strategies focus on mentoring and advising models and financial incentives. The key idea behind these supports is that these students face not only academic barriers, but also barriers that go beyond the basic academic skills upon which remediation focuses. The research on many of these support programs remains mixed, with small positive effects in the short term, but few lasting long-term impacts. A number of random assignment evaluations of educational interventions have focused on enhancing student services. In one such study, students randomly assigned to receive financial incentives and increased availability to academic counseling were slightly more likely to

stay in school/college into the second semester and more likely to register for college once these supports had ended (Radford, 2012).

Duration and Structure

Remedial classes are not necessarily semester or quarter length classes. Some institutions offer crash courses over a few days or weeks in order to bring students up to speed quickly. These classes usually have tests and homework like any other, often with a focus on review to ensure comprehension by students. Most remedial classes stress basic concepts that must be understood before complicated ideas can be applied. By getting these concepts firmly in hand, students can better focus on learning complex applications of them in more advanced courses (Shobha Misra, 2015). Remedial teaching can be given for a period of 6 weeks to 3 months, once or twice a week at school/ college. Classes are often small with a focus on high teacher student interaction and can take place at a time feasible to the student and the teacher, and also to accommodate various needs of the students. In the course of the class, the teacher will bring students up to speed so that they have skills comparable to those of their peers. These classes can be conducted by discontinuing system of casual batch and allowing them to be with the regular batches, this might help. These courses only help students gain a better understanding of a particular subject. By reviewing and focusing on the basics, students become better prepared to keep up with the advanced course/ classes. Remedial courses can also teach students better study and learning habits, to help them succeed where they might have otherwise found difficulty. In remedial education students are usually given assessments to determine their level of competency and can be enhanced through student and faculty feedback.

Effectiveness

Any students required to take remedial classes should not feel ashamed. These courses only help students gain a better understanding of a particular subject. By reviewing and focusing on the basics, students become better prepared to keep up with advanced classes. Remedial courses can also teach students better study and learning habits, to help them succeed where they might have otherwise found difficulty (Jamie P Merisotis, Ronald A. Phipps, 2000). The question that rises is whether successful completion of a remedial course guarantees student's success in college. Research suggests that bridge programs that integrate basic skills and remedial education with higher-level content or technical training can produce substantially better results than traditional remedial programs (Foster *et al.*, 2011). Remedial teaching helps students identify difficult learning areas and bridge the gaps in their learning progress by providing supplementary information throughout the course of study. It can cultivate team spirit among teachers, which is conducive to the whole school or college approach in education. It helps to promote professional exchange among teachers who can share and learn from the strength of each other, so that teaching effectiveness can be further enhanced (Dirk T. Tempelaar, Bart Rienties, 2013).

Conclusion / Recommendations

The literature on remedial education consistently points out that legislation, policies and programs need to ensure the development and implementation of appropriate remedial education programs.

Remedial education should also be part of the teacher education curriculum and in-service teacher training. Therefore teachers, facilitators or other program instructors and supervisors should be trained in strategies to best identify potential beneficiaries, become familiar with the pedagogic materials and understand how to put them in practice in the classroom, in addition to assess and monitor student learning during the intervention. More information is needed on how to deliver the best training and support for teachers and others involved to ensure that the remedial interventions translates into improved outcomes, so all students may have the opportunity to enhance their learning skills so that they are less likely to fall behind and dropout. However, remediation policies are often costly. Banerjee *et al.* (2007), Banerjee *et al.* (2010) and Banerjee *et al.* (2016) discuss remedial education programs and their effectiveness in developing countries, finding evidence that suggest that targeted remedial interventions can address effectively school children's learning gaps. Remedial education programs help children to improve learning levels but students need to continue to receive a quality education where their learning gains can be sustained so they will not fall back (Slavin *et al.*, 2009). Studies such as Victor Lavy *et al.* (2018) consider several long run outcomes, including continuation to higher education and subsequent labor market earnings because of remedial assistance. Underperformance among undergraduates, in higher education institutions is not well established or well defined in Indian scenario, yet the identification and remediation of undergraduates and professional graduates in higher educational institutions who are not performing up to acceptable standards is crucial to educational standards. Though there are many studies at global level for remedial education in higher educational institutions only few studies are present in India for school level only. There is little evidence of studies on remedial education for higher educational institutions in India exist. It is recommended that effective remediation policies in higher education institutions should be brought into force and use proactive strategies to help students develop better approaches to academic success. Educational institutions may combine academic counseling and mentoring for the students to facilitate self-directed learning with remedial teaching approaches. Further research is needed on the question of which aspects of the courses are most strongly associated with improved rates of student success thorough remedial education.

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