References

Adinarayan, K. (1984). Science Teaching in Primary Schools – A Training Programme. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Agnihotri, S. K. (1987). Study of Influence of some of the Methods of Teaching Physics on the Achievement in Physics of Class X Students in Delhi. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Agarwal, K. K. (1973). Prediction of the Scholastic Success in Science Subjects with the Help of a Battery of Psychological Tests among High School Students of Uttar Pradesh. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

American Association for the Advancement of Science [AAAS]. (1993). *Benchmarks for Science literacy.* Retrieved from http://www.project2061.org/publications /bsl online /index.php.

Anderson, L. W. , Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R.E., Pintrich,P. R., Raths, J., & Wittrock, M. C. (2001). A Taxonomy for Learning, Teaching And Assessing: A revision of Bloom's Taxonomy of Educational Objectives. In *Theory* into Practice (2002), 41 (4).

Anjaria, R. (1984). Systems Approach in the Teaching of Science: An Exploration. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Ansari, A. M. (1984). Construction and Standardization of Achievement Tests in General Science for Standard V, VI and VII for Children Studying through Hindi as the Medium of Instruction in Greater Bombay. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Aram, A., Rangaswamy P. and Feroze, M. (1957). Construction and Standardisation of Coimbtore Achievement Tests. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Baqer, M. (1965). Differential factors in pupil success in science, arts and commerce courses at the higher secondary stage. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Barve, M. V. (1986). Preparation Field and Testing of Filmstrips for the Teaching of Science- a Course in Standard IX, and a Study of Their Comparative Effectiveness in the Teaching-Learning Process as Compared to the Traditional Practice. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Best, J. W. & Kahn, J. V. (2009). Research in Education. (10th Ed.). New Delhi: Prentice Hall of India.

Betts, S. C. (2008). Teaching and Assessing Basic Concepts To Advanced Applications: Using Bloom's Taxonomy to Inform Graduate Course Design. *Academy of Educational Leadership Journal, 12(3).*

Bhola, V. (1978). Measurement of achievement in Physics and Chemistry - A Critical Study of the Effectiveness of the Matriculation Examination in Physics and Chemistry Conducted

by the Board of School Education. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook 1: Cognitive domain. New York: David Mckay.

Bountra, R. K. (1970). Construction and Standardization of Achievement Tests in Physical Sciences (Physics and Chemistry) for High School Classes in Uttar Pradesh. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Brownstein, M. A. (1985). A Study Of The Adaptation And Application Of Bloom's Taxonomy Of Educational Objectives: Cognitive Domain, To Science Education In The People's Republic Of China (Published Doctoral Dissertation). Temple University, Philadelphia.

Buch, M.B., Patel, J. M. and Kotwal, S. D. (1960). Achievements Tests for Standard VIII of Secondary schools in Gujarat. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Cahan, D. (2003). *From Natural Philosophy to the Sciences Writing the History of Nineteenth – Century Science.* Chicago: The University of Chicago Press.

Central Board of Secondary Education (2010). *Teachers' Manual on Formative Assessment Science Class IX*. New Delhi: CBSE. Retrieved from http://cbseacademic.nic.in/web_material/publication/archive/CBSE-FA-Class-IX%20(Science)%20Final.pdf

Chatterjee, S., Mukherjee, M., and Mitra S. K. (1978). Higher Secondary Science Achievement as related to Scientific Interest and Aptitude. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Chhaya, M. P. (1978). Achievement in Physics of the Students of Class VIII and X of (i) The Central Schools, (ii) Public Schools of Central Board of Secondary Education, (iii) Schools of the Council of Indian School Certificate of Education, of Bombay, Delhi, Calcuta and Madras. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara..

Chhikara, M. S. (1985). An Investigation into Relationship of Reasoning Abilities with Achievement of Concepts in Life Sciences. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Clough, M. P. (2015). A Science that Promotes the Characteristics of Science and Scientists. *K-12 STEM Education Vol. 1, No. 1, Jan-Mar 2015, pp.23-29.*

Conant, J. (1951). Science and Common Sense. New York: Holt Rinehart and Winston. In *Mohapatra, J. K. & Mahapatra, M. (1999). New Dimensions of Science Curriculum An Operational Approach. New Delhi:* Commonwealth Publishers.

Crowe, A., Dirks, C., and Wenderoth, M. P. (2008). Biology in Bloom: Implementing Bloom's Taxonomy to Enhance Student Learning in Biology. *CBE—Life Sciences Education (7)*, 368–381.

Dash, S. C. (1967). Standardization of a Battery of Achievement Tests for Students of Class VII in the Basic and Traditional Schools of Orissa and Comparison of their Achievement and the Factorial Content of the Battery. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Dave, M. B. (1964). Construction and Standardization of Scientific Aptitude Test. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Deopuria, R. P. (1984). A Comparative Study of Teaching Science through Environmental and Traditional Approach in schools of Madhya Pradesh. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Devi Uma, M. R. (2009). A Study of the Relationship between Problem Solving Ability and Academic Achievement of Secondary School Students. In *Journal of Educational Research and Extension, 46(2).* April-June 2009. 1-10.

Ehsan, S. B. (2017). Effectiveness of MCQs in Assessing Higher Order Cognition. *Biomedica, 33*(4), 269-272.

Fitzpatrick, F.C. (1960). *Policies for science Education*. New York: Bureau of Publications.

Gay, L. R., & Airasan, P. (1999). Educational Research: Competencies for Analysis and Applications (6th Ed.). Boston: Pearson.

Ghosh, G. P. (1985). A Study of the Achievement of the Students in Chemistry and Finding Relationship with some of its Determinants. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Ghosh, S. (1986). A Critical Study of Scientific Attitude and Aptitude of the Students and Determination of some Determinants of Scientific Aptitude. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Gillian, M. E. (2007). *Traditional Versus Alternative Assessments: Which Type Do High School Teachers Perceive as Most Effective in The Assessment Of Higher-Order Thinking Skills?* (Published doctoral dissertation). Saint Louis University.

Gupta, J. S. (1962). Construction and Standardization of the Attainment Test in General Science for Class VIII (in Hindi). In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Gupta, S. K. (1974). Factor Analysis of Attainment of Higher Secondary/ Pre-university Passed Students in Different Aspects of Physical Sciences and Mathematics. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara..

Gyanapragasam, N. S. (1975). Setting-up of a Question Bank of Objective Tests. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

Halawi, L. A., Pires, S., and McCarthy, R. V. (2009). An Evaluation of E-Learning on the Basis of Bloom's Taxonomy: An Exploratory Study. *Journal of Education for Business, July/August 2009.*

Islam, M. F. (1975). Construction and Standardization of the Achievement Test in General Science for Students of Class VII of Bihar. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara..

Jha, V. (1970). An Investigation into Some Factors related to Achievement in science by Students in secondary schools. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Joseph, T. T. (1979). A study of Some Predictors of Achievement in Chemistry at the Pre-degree Level. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Joshi, A. (1987). Evolvement of an Instructional Strategy for Teaching Elements of Science to Class IX Students of M. P. State. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Khandelwale, S. S. (1981). Construction and Standardization of Achievement Tests in Physics for Class IX in Vidarbha region. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Lederman, N. C. (1983). Delineating Classroom Variables Related to Students' Conception of The Nature of Science. Dissertation Abstracts International, 45.483-A.

Lombardi, P. (2019). *Instructional Methods, Strategies, and Technologies to Meet The Needs of All Learners*. Retrieved from https://granite.pressbooks.pub/teachingdiverselearners/

Love, B. J. (2009). The Inclusion of Bloom's Taxonomy in State Learning Standards: A Content Analysis. (Published doctoral dissertation). Southern Illinois University, Carbondale.

Massachusetts Department of Elementary and Secondary Education (2016). *Science and Technology/ Engineering Massachusetts Curriculum Framework - 2016.* Malden: Massachusetts Department of Elementary and Secondary Education.

Mathur, G.N. (1971). Predictive Validity of Some Psychological Factors for Success in Science Courses. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

McCoubrie, P. (2004). Improving the Fairness of Multiple Choice Questions: A Literature Review. *Medical Teacher, 26*(8), 709-712.

McHaugh, S. (2013). Retrieved form http://doverdlc.blogspot.in/2013/04/blooms-taxonomy-relevant-or-redundant.html

Mehna, V. H. (1986). An Investigation into Some Factors Affecting Academic Achievement in Science of Standard IX Students of Greater Bombay. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Menon, P. N. (1982). Performance of students at Polytechnics in relation to their Academic Achievements, Intelligence, Differential Aptitudes, Adjustment and Aspiration Level. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Ministry of Education. (1949). *Report of University Education Commission*. New Delhi: Government of India.

Ministry of Education. (1953). *Report of Secondary Education Commission*. New Delhi: Government of India.

Ministry of Education. (1966). *Report of Education Commission*. New Delhi: Government of India.

Ministry of Education. (1975).*Curriculum for Ten Year School: A Framework*. New Delhi: Government of India.

Ministry of Human Resources and Development (1986). *National Policy on Education*. New Delhi: MHRD.

Ministry of Human Resources and Development. (1988).*Curriculum for Elementary and Secondary Education: A Framework.* New Delhi: MHRD.

Miser, R. S. (2017). A Phenomenological Study of Secondary Teachers' Experiences with Assessing Higher Order Thinking Skills. (Published Doctoral Dissertation). University of Dayton, Dayton.

Mishra, S. P. (1978). A comparative Study of High and Low Achievers in Science, Commerce and Arts on Creativity, Intelligence and Anxiety. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Nair, P. N. G. (1978). Impact of Creative Methods of Teaching on the Attainment of Higher Objectives in Science. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

National Academy Press. (1996). National Science Education Standards. Washington DC: NAP.

National Council of Educational Research and Training. (2000). *National Curriculum Framework for School Education*. New Delhi: NCERT.

National Council of Educational Research and Training. (2005). *National Curriculum Framework*. New Delhi: NCERT.

National Council of Educational Research and Training. (2006). *Position Paper National Focus Group on Teaching of Science*. New Delhi: NCERT.

National Council of Educational Research and Training. (2011). National Study on Ten Year School Curriculum Implementation. New Delhi: NCERT.

National Council of Educational Research and Training. (2013). *Pedagogy of Science Textbook for B. Ed. Part I.* New Delhi: NCERT.

National Council of Educational Research and Training. (2020). *National Education Policy - 2020*. New Delhi: NCERT.

National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas.* Committee on a Conceptual Framework for New K-12 Science Education Standards. Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

National Science Teachers Association. (2002*). NSTA Position Statement: Elementary school Science.* Retrieved from http://www.nsta.org/about/positions/elementary.aspx.

Nayar, P. P. (1971). Some Predictors of Achievements in Science at the Secondary School Stage. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

OECD (2010), *PISA 2009 at a Glance*. OECD Publishing. Retrieved from https://www.oecd.org/pisa/46660259.pdf

Nicholas, A., McNett, J. M., and Harvey, C. (2003). Critical thinking in the management classroom: Bloom's taxonomy as a learning tool. *Journal of Management Education, 27*(5), 533.

Padma Priya, A. V. (2012). *Validation of a Learning Package Based on Metacognitive Process for Enhancing Metacognitive Skills and Achievement in Biology at Secondary Level.* An Unpublished Ph.D. Thesis. Kottayam: Mahatma Gandhi University.

Pal, G. (1982). An Enquiry into the Factors involved in the Learning of Science by Adolescent Pupils. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Paltasingh, S. (2008). Relationship among Creativity, Intelligence and Achievement Scores of Secondary School Students. In *Journal of Teacher Education and Research*, Noida*. 3(2).* Dec 2008. 54-60.

Patel. R. C. (1997). A Study of Scientific Attitude and its Correlates among Secondary School Students of Baroda (Unpublished Doctoral Dissertation). Centre of Advanced Study in Education, Vadodara.

Pathak, A. B. (1972). Factors Differentiating High and Low Achievers in Science. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Pillai, A. S. (1987). An Experimental Study of Gagne's Conditions of Learning for Instruction in Physics at Secondary Level. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Pillai, T. R. (2013). *Developing and Implementing an Intervention Programme in Science & Technology for Topics of Physics for Standard IX.* An Unpublished Ph. D. Thesis. CASE: The Maharaja Sayajirao University of Baroda, Vadodara.

Prajapati, N., & Kothari, R. G. (2019). Contribution of Science Textbook to Higher Cognitive Development of Learners. *Edutracks, 19*(1), 40-42.

Prajapati, N. & Kothari, R. G. (2020). *Teachers' Perception on Implementing HOTS in Science Education*. Proceedings of epiSTEME 8 International Conference to Review Research in Science, Technology and Mathematics Education, 327-334.

Professional Testing Inc. (2021). *Building High Quality Examination Programs.* Retrieved from https://www.proftesting.com/test_topics/steps_4.php

Raveendranathan, A. K. (1983). A Comparative Study of the Impact of Medium of Instruction on the Science Achievement, Science Interest and Mental Health Status of Secondary School Students. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Rustaman, N. Y. (2017). Assessment in Science Education. *Journal of Physics: Conference Series 895012141*. DOI: 10.1088/1742-6596/895/1/012141

Rup Prakash (1968). Construction and Standardization of an Achievement Test in Everyday Science for Class VIII Students of the Punjab and to construct a scale to Assess the

Attitude of the Students towards Learning of Science. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Saido, Gulistan Mohammed et al. (2018). Higher Order Thinking Skills Among Secondary School Students in Science Learning. *MOJES: Malaysian Online Journal of Educational Sciences, 3(3),* 13-20. ISSN 2289-3024. Available at: https://mojes.um.edu.my/article/view/12778. Date accessed: 07 Aug. 2019.

Sali, V. Z. (1977). Construction and Standardization of Unit Tests in Physics for Pupils of Standard VIII. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara..

Saxena, K. N. (1960). Construction and Standardization of an Achievement Test in General Science for Class VIII in Uttar Pradesh Schools (for use in Educational Guidance). In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

SCERT. (1971). Standardization of a Science Attainment Test for Class VIII in Telugu, Hyderabad. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Sharma, V. S. (1975). Comparative Style of the Achievement of Boys and Girls in General Science and Mathematics at Delta Class in Rajasthan. In M. B. Buch (Ed.). *Fourth Survey of Educational Research*. NCERT, New Delhi.

Sharma, V. S. (1976). Battery of Tests for the Delta Class in General Science and Mathematics (Analysis, Validation and Standardization. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara..

Sharma, R. C. (2013). *Modern Science Teaching (6th ed.)*. New Delhi: Dhanpat Rai Publishing Company.

Sheth, U. (1967). Construction and Standardization of Achievement Tests in General Science for Standards V, VI and VII for Children studying through Gujarati as the Medium of Instruction in Greater Bombay. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

SIE (Kerala) (1965). Construction and Standardization of an Achievement Test in General Science for Standard VIII Students in Kerala. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

Singh, B. (Ed.). (1988). *Jawaharlal Nehru on Science and Society A Collection of his Writings and Speeches.* New Delhi: Nehru Memorial Museum and Library.

Singh, H. D. S. (1973). Construction and Standardization of Achievement Tests in General Science for Standards V, VI and VII for Children studying through Sindhi as the Medium of Instruction in Greater Bombay. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

Singh, S. P. (1975). High School Examination, Aptitude and Teachers' Estimate as Predictors of Achievement in Science at the Intermediate Level. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

Senapati, B. B. (1980). A Study of Interest and Ability of the Secondary School Students in Science. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Shelat, P. (2012). *Developing an Instructional Strategy and Studying its Effectiveness for Comprehension in Science among Class VII Students.* An Unpublished Ph. D. Thesis. CASE: The Maharaja Sayajirao University of Baroda, Vadodara.

Srivastava, N. (1980). Intelligence, Interest, Adjustment and Family Status as Predictors of Educational Attainment of High School Students. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Starnes, B. A. (2005). Aligning Objectives, Instruction, And Assessment for Metacognitive Thinking: Employing The Revised Bloom's Taxonomy to Promote Accountability In Educational Practices For Nursing Students. (Published doctoral dissertation). Capella University, Minnesota.

State University (2021). *Taxonomy of Educational Objectives. The First Taxonomy of Educational Objectives: Cognitive Domain, The affective Domain, Revision of the Taxonomy*. Retrieved from https://education.stateuniversity.com/pages/2475/Taxonomies-Educational-Objectives.html

Sukhia, S. P. (1963). *Elements of Education Research*. New Delhi: Allied Publishers.

Tandel, S. (2012). *Development of Metacognitive Skills in Science Student-Teachers through Constructivist Approach.* An Unpublished Ph. D. Thesis. CASE: The Maharaja Sayajirao University of Baroda, Vadodara.

Tewari, S. R. (1975). Factorial Analysis of Areas of Attainments in the Science and Mathematics Courses at the High School Level. In M. B. Buch (Ed.). *Second Survey of Educational Research*. Society for Educational Research and Development, Vadodara.

The Science Teacher. (2021). *Assessment Design Driving the right behaviours: 10 principles of assessment design.* Retrieved from https://thescienceteacher.co.uk/assessment-design/

UNESCO (2014). *The Crucial Role of Science for Sustainable Development and the Post-2015 Development Agenda.*

Vanajakshi, A. (1970). The Construction and Standardization of the Achievement Tests in Non-Language Subjects for Class VII of Andhra Pradesh. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Venkataramana, C. (1970). Construction and Standardization of an Aptitude Test in Science. In M. B. Buch (Ed.). *First Survey of Educational Research*. Center of Advanced Study in Education, Vadodara.

Vijaylakshmi, J. (1980). Academic Achievement and Socio-economic Status as Predictors of Creative Talent. In M. B. Buch (Ed.). *Third Survey of Educational Research*. NCERT, New Delhi.

Vogt, W. P. (2005). Dictionary of Statistics and Methodology: A Non-technical Guide for the Social Sciences (3rd Ed.). Thousands Oaks CA: Sage.

Wruck, L. M. (2010). *Computer-Mediated Communication: Instructional Design Strategies That Support the Attainment of Bloom's Higher Order Cognitive Skills In Asynchronous Discussion Questions.* (Published doctoral dissertation). Capella University, Minnesota.